Field testing of the revised Paediatric Food-Based Dietary Guidelines among mothers/caregivers of children aged 12–36 months in the Stellenbosch Municipality in the Western Cape province, South Africa

by

Stacy-Leigh Samuels

Thesis presented in partial fulfilment of the requirements for the degree of Master of Nutrition in the Faculty of Health Sciences at Stellenbosch University

Faculty of Medicine and Health Sciences,
Department of Interdisciplinary Health Sciences,
Division of Human Nutrition

Supervisors:

Dr Lisanne Monica du Plessis

Mrs Lynette Carmen Daniels

December 2016

Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third-party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

December 2016

Stacy-Leigh Samuels

Abstract

Introduction

In order to address the poor nutritional and micronutrient status of children in South Africa, strategies promoting appropriate infant and young child feeding (IYCF) practices are fundamental. One such strategy is the development and revision of the South African Paediatric Food-Based Dietary Guidelines (PFBDG) which promote optimal feeding practices for children between the ages of 0–5 years. Before the PFBDGs are adopted and utilised by the Department of Health (DoH) as an educational tool in South Africa, they require thorough testing for adequacy and comprehension among specific groups, particularly mothers and caregivers.

Aim

The aim of this study was to determine the appropriateness and understanding of the revised PFBDGs among mothers/caregivers of children aged 12–36 months in the Stellenbosch Municipality in the Western Cape province, South Africa.

Methodology

A descriptive cross-sectional qualitative study was conducted. Data was collected from focus-group discussions (FGD) to assess the overall understanding and interpretation of the PFBDGs and to gain insight into previous exposure and the perceived barriers to and enablers of the implementation of the PFBDGs. Nine FGDs were conducted, ranging from 4–11 participants each. A total of 65 mothers/caregivers participated in the study.

Results

This study revealed that participants expressed a general understanding and interpretation of the core messages contained in the PFBDGs. The PFBDGs regarding breastfeeding and hand washing were the two guidelines that were the most understood by participants. Misinterpretation and confusion arose regarding certain PFBDGs, namely guidelines three, four, eight and nine, which refer to the importance of protein-rich foods, Vitamin A-rich fruit and vegetables, five small meals, and the inclusion of starchy foods, respectively. This was as a result of unfamiliar terminology,

ambiguity, and examples not being provided. With regard to previous exposure, the findings from this study suggested that participants were familiar with and recognised the majority of the concepts conveyed by the PFBDGs. The predominant sources of nutrition information, listed by participants from informal areas, were clinics, hospitals and nurses. Those from formal areas reported mainly utilising the Internet and books. Strong themes emerging from discussions around the perceived barriers to the implementation of the PFBDGs included cost and affordability, time constraints, accessibility, as well as marketing, while perceived enablers included education, visual effects, improved marketing techniques, and improved accessibility and availability of food.

Conclusion

In order for the PFBDGs to be implemented successfully, certain aspects need attention. Only through addressing common barriers and making the necessary adaptations, will the PFBDGs be implemented effectively, and thus have the intended outcome on IYCF practices.

Opsomming

Inleiding

Om die gehalte van die voeding- en mikronutriëntstatus van kinders in Suid-Afrika aan te spreek, is strategieë vir die bevordering van gepaste baba en jong kind voeding (BJKV) fundamenteel. Een so strategie is die ontwikkeling en hersiening van die Suid-Afrikaanse Pediatriese Voedselgebaseerde Dieet Riglyne (PVDR) wat die optimale voedingspraktyke vir kinders tussen die ouderdomme 0–5 jaar bevorder. Voor die implementering van die PVDR as 'n opvoedkundige middel in Suid-Afrika kan geskied, vereis die gesondheidsdepartement 'n deeglike evaluasie van die riglyne vir toereikendheid en begrip onder spesifieke groepe, veral moeders en versorgers.

Doelwit

Die doel van die studie was om die toepaslikheid en begrip van die hersiene PVDR onder moeders/versorgers van kinders tussen die ouderdomme 12–36 maande in die Stellenbosch Munisipaliteit in die Wes-Kaap provinsie, Suid-Afrika te bepaal.

Metodiek

'n Beskrywende deursnit kwalitatiewe studie is uitgevoer. Data is ingesamel vanaf fokusgroepbesprekings (FGB) om sodoende die algemene begrip en interpretasie van die PVDR te evalueer en insigte te versamel rakende vorige blootstellings en die moontlike hindernisse en bemagtigers tot die implementering van die riglyne. Nege FGBs is gehou met 4–11 deelnemers elk. 'n Totaal van 65 moeders/versorgers het aan die studie deelgeneem.

Resultate

Die studie het bepaal dat die deelnemers 'n algemene begrip en interpretasie in lyn met die kern boodskappe van die PVDR toon. Die riglyne oor borsvoeding en hande was het die hoogste vlak van begrip geregistreer. Waninterpretasies en verwarring het met riglyne drie, vier, agt en nege voorgekom. Hierdie PVDR dek die belangrikheid van hoë-proteïen kosse, Vitamiene-A ryk vrugte en groente, vyf klein maaltye, en die insluit van styselkosse, onderskeidelik. Die hoofredes hiervoor is die gebruik van onbekende terminologie, dubbelsinnigheid en 'n tekort aan voorbeelde. Rakende

vorige blootstelling het die studie bevind dat deelnemers bekend is met, en herkenning toon vir die meerderheid van die konsepte wat in die PVDR vervat is. Die hoofbronne van voedinginligting wat genoem is deur deelnemers uit informele areas, is klinieke, hospitale, en verpleegsters. Deelnemers uit formele areas het die Internet en boeke as hoofbronne genoem. Sterk temas het navore gekom uit die besprekings oor die moontlike hindernisse vir die implementering van die PVDR, insluitend bekostigbaarheid, tydbeperkings, toeganklikheid, en bemarking. Moontlike bemagtigers is geïdentifiseer, naamlik opvoeding, visuele effekte, verbeterde bemarkingstegnieke, asook verbeterde toeganklikheid en beskikbaarheid van voedsel.

Gevolgtrekking

Ten einde die PVDR suksesvol te implementeer moet sekere aspekte aandag geniet. Slegs deur die algemene hindernisse aan te spreek, en die nodige aanpassings te maak, kan die PVDR suksesvol geïmplementeer word en sodoende die gewenste uitwerking op BJKV hê.

Acknowledgements

The following people should be acknowledged for their support and special contribution to this project.

- My fiancé, Wilco Strydom, for his love, support and motivation throughout my years of study. Thank you for being my rock and always believing in me.
- My loving family and friends, for their support. I am forever grateful to my parents, Bruce and Sabrina Samuels, for giving me the opportunity to follow my dreams and always being a phone call away in times of need. My soon-to-be in-laws, Eduan and Hanlie Strydom, thank you for your constant encouragement throughout the process.
- My supervisors, Lisanne du Plessis and Lynette Daniels, for their ongoing support and expert guidance. Thank you for sharing your wealth of knowledge with me, pushing me to reach my full potential and instilling the love of infant and young child nutrition that you both possess in me.
- The staff at the Division of Human Nutrition, especially Janicke Visser and Florence Williams, for their assistance during the master's course.
- Stellenbosch University Rural Medical Education Partnership Initiative (SURMEPI) and Harry Crossley for their financial support.

Contributions by Principal Researcher and Fellow Researchers
The principal researcher, Stacy-Leigh Samuels, developed the idea and the protocol. The principal researcher planned the study, undertook data collection, captured the data for analysis, analysed the data, interpreted the data and drafted the thesis. Dr LM du Plessis and Mrs LC Daniels provided guidance at all stages and reviewed the protocol and thesis.

Definitions

Complementary feeding – Giving a child other foods (solid or semi-solid) in addition to breastfeeding or replacement feeding to meet the baby's nutrient requirements from six months of age.[1]

Exclusive breastfeeding – Feeding a child through only breastfeeding, giving no other liquids or solids, not even water, with the exception of prescribed drops or syrups consisting of vitamins and mineral supplements or medicines, and expressed breast milk.[1]

Food-Based Dietary Guidelines – Short, positive, science-based messages that aim to change the eating behaviour of the general population towards more optimal diets that meet energy and nutrient requirements, while simultaneously helping to protect against the development of non-communicable diseases.[2,3]

Food security – A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.[4]

Mixed feeding – Feeding both breast milk and other foods or liquids to a child under six months of age.[1]

Nutrition transition – Changes in dietary patterns and nutrient intakes of individuals, families, groups of people, or whole populations when their food environment and/or other circumstances change.[5]

Overweight – Weight-for-height above two standard deviations (overweight and obese) or above three standard deviations (obese) from the median of the WHO Child Growth Standards.[6]

Stunting – Height-for-age below minus two (moderate and severe) and below minus three (severe) standard deviations from median height for age of the WHO Child Growth

Standards.[6]

Underweight – Weight-for-age below minus two standard deviations (moderate and severe underweight) and minus three standard deviations (severe underweight) from the median of the WHO Child Growth Standards.[6]

Under-5 mortality rate – Number of children dying between birth and exactly five years of age, expressed per 1,000 live births.[6]

Wasting – Weight-for-height below minus two standard deviations (moderate and severe wasting) and minus three standard deviations (severe wasting) from the median of the WHO Child Growth Standards.[6]

Abbreviations

ADSA	Association for Dietetics in South Africa
CBO	Community-Based Organisations
DHS	Demographic and Health Survey
FAO	Food and Agriculture Organization
FBDG	Food-Based Dietary Guideline
FGD	Focus-Group Discussion
HREC (SU)	Health Research Ethics Committee Stellenbosch University
IDA	Iron Deficiency Anaemia
IFSS	Integrated Food Security Strategy
INP	Integrated Nutrition Programme
IYCF	Infant and Young Child Feeding
MBFI	Mother-Baby Friendly Initiative
MDG	Millennium Development Goal
NCD	Non-Communicable Disease
NDP	National Development Plan
NFCS	National Food Consumption Survey
NFCS-FB	National Food Consumption Survey Fortification Baseline
NSSA	Nutrition Society of South Africa
PFBDG	Paediatric Food-Based Dietary Guideline
PMTCT	Prevention of Mother-to-Child Transmission
RtHB	Road-to-Health Booklet
RtHC	Road-to-Health Chart
SAM	Severe Acute Malnutrition
SANHANES	South African National Health and Nutrition Examination Survey
SAVACG	South African Vitamin A Consultative Group
SDG	Sustainable Development Goal

UNICEF	United Nations Children's Fund
U5MR	Under-5 Mortality Rate
VAD	Vitamin A Deficiency
VAS	Vitamin A Supplementation
WHO	World Health Organization
WASH	Water, Sanitation and Hygiene

Contents

List of Figures

List of Tables

Chapter 1

Literature Overview and Motivation for the Study

1.1 Introduction

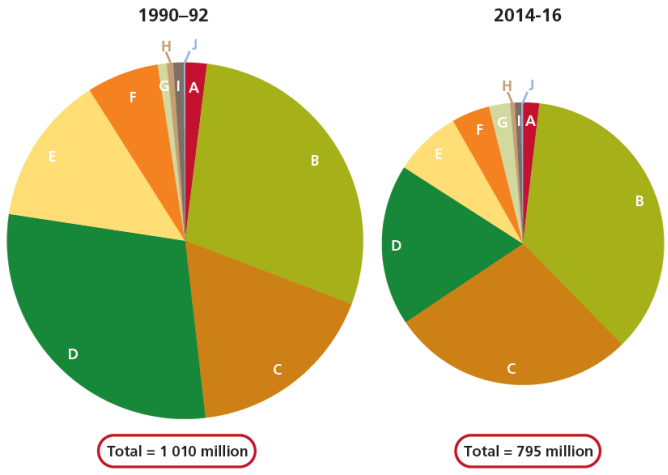
Malnutrition remains a common global concern, with only 36 countries accounting for 90% of the world's stunted children.[7] South Africa has been classified as one of these high-burden countries. In order to address the nutritional and micronutrient status of children in South Africa, strategies promoting appropriate infant and young child feeding (IYCF) practices are fundamental. One such strategy is the development and revision of the South African Paediatric Food-Based Dietary Guidelines (PFBDG) which promote exclusive and continued breastfeeding, adequate complementary feeding, hygienic practices, and regular activity among children under the age of five years.[2] The central focus of this study was to test the PFBDGs for the 12–36 month age group for appropriateness and understanding.

This literature overview focuses on the extent of malnutrition and food insecurity on a global and national level and presents literature on the nutrition transition and the nutritional and micronutrient status of children in South Africa, as well as the strategies and interventions aimed at addressing malnutrition in the country. It further explores the development of the FBDGs in South Africa and the evidence-based support for the PFBDGs. The overview concludes with a brief summary and motivation for the study.

1.2 Malnutrition and food security

Malnutrition affects millions of individuals worldwide. The Food and Agriculture Organization (FAO) 2015 report, 'The State of Food Insecurity in the World', indicates that 795 million people experience undernourishment.[4] Thus, approximately one in every nine individuals cannot meet their needs in order to lead an active and healthy life. From

1990–92, these figures have however improved. According to the report, the prevalence of undernourishment is currently 10.9%, an improvement from 18.6% in 1990–92. The number of undernourished people by region can be seen in Figure 1.1. Southern Asia and sub-Saharan Africa are the regions most affected by undernourishment and contribute to more than half of the total people affected. This indicates that although many of the listed regions have shown improvements, progress in Southern Asia and sub-Saharan Africa remains slow.[4]



	Number (millions)		Regional share (%)	
	1990–92	2014–16	1990–92	2014–16
A Developed regions	20	15	2.0	1.8
B Southern Asia	291	281	28.8	35.4
C Sub-Saharan Africa	176	220	17.4	27.7
D Eastern Asia	295	145	29.2	18.3
E South-Eastern Asia	138	61	13.6	7.6
F Latin America and the Caribbean	66	34	6.5	4.3
G Western Asia	8	19	0.8	2.4
H Northern Africa	6	4	0.6	0.5
I Caucasus and Central Asia	10	6	0.9	0.7
J Oceania	1	1	0.1	0.2
Total	1 011	795	100	100

Note: The areas of the pie charts are proportional to the total number of undernourished in each period. Data for 2014–16 refer to provisional estimates. All figures are rounded.
Source: FAO.

Figure 1.1: Total number of undernourished people by region, 1990–92 and 2014–16[4]

Table 1.1 indicates the household food security status of South Africans. It is clear from the most recent data that food security has improved in the country since 2005. Households at risk of hunger have however increased since 1999.[8–10]

Table 1.1: National household food security in South Africa from 1999–2012[8–10]

	NFCS, 1999	NFCS-FB-I, 2005	SANHANES, 2012
Food security	25.0%	19.8%	45.6%
At risk of hunger	23.0%	27.9%	28.3%
Food insecurity	52.0%	51.6%	26.0%

Undernourishment, in the form of stunting, underweight and wasting, is of great concern, particularly in low- and middle-income countries.[7] A large proportion of the individuals affected are women and young children. The global prevalence of stunting among children under 5 years can be seen in Figure 1.2. Data from 2005 indicates that in

developing countries, 32.0% of children under the age of 5 years are stunted, 20.2% are underweight and 3.5% are severely wasted. In Africa alone, 40.1% of children under 5 years are stunted, with Eastern Africa having the highest prevalence at 50.0%.[7] Twenty-three of the countries with a stunting prevalence above 40% can be found in Africa, while 16 can be found in Asia and 1 in Latin America.[7]

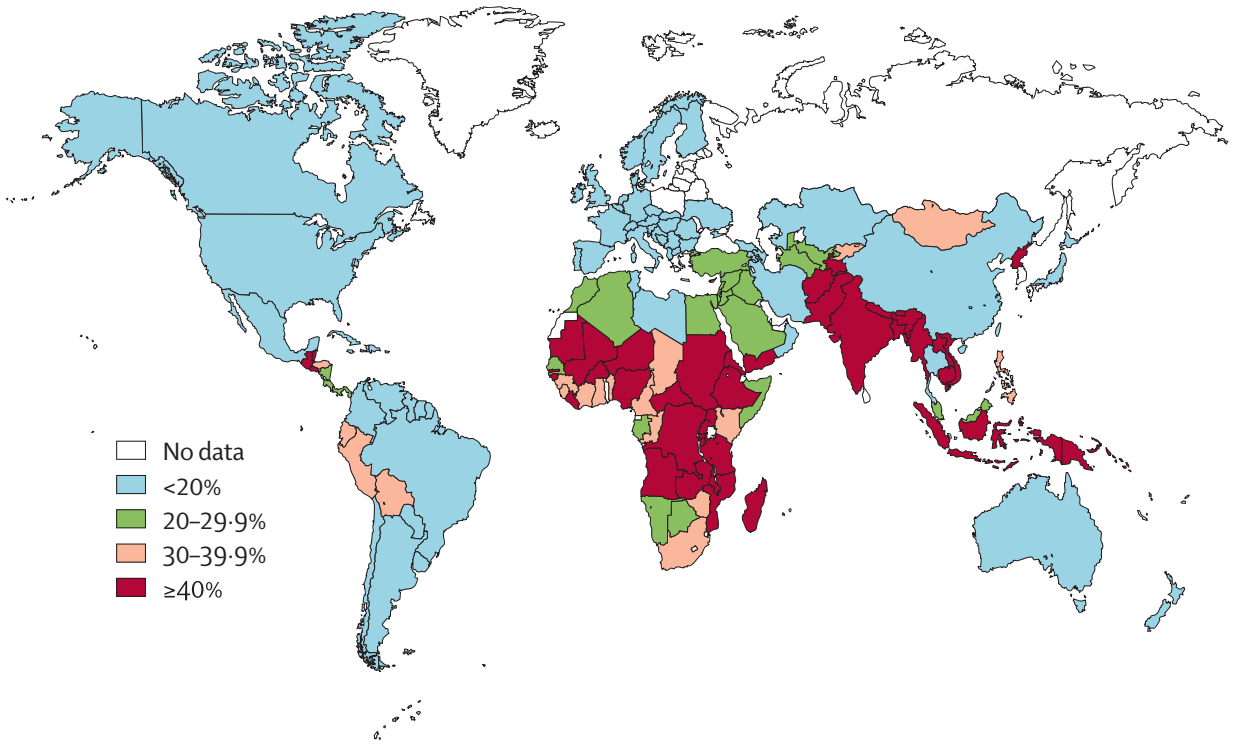


Figure 1.2: Global prevalence of stunting among children under 5 years[7]

Overnourishment in children, in the form of overweight and obesity, is also on the rise. Worldwide, approximately 43 million children (7%) under the age of 5 years are overweight. Data from 2011 shows that the prevalence of overweight in sub-Saharan Africa was also 7%, which is more than double the 1990 figure of 3%.[6]

1.2.1 Sustainable development goals

The Millennium Development Goals (MDGs) were launched in 2000 by the United Nations to improve the livelihood of people across the world. Eight goals addressing poverty, hunger, and disease, amongst others, were put forward with targets to be met by 2015. Although many of these goals and targets were achieved, the most vulnerable and disadvantaged are still suffering from the effects of poverty, inequality and malnutrition.[11] Thus, the Sustainable Development Goals (SDGs) were adopted in September 2015 with the aim of building on the MDGs by addressing targets that were

not achieved and improving global figures by the year 2030. Seventeen new SDGs were announced, together with 169 targets to address global development issues.[12] The 17 goals are shown graphically in Figure 1.3.

Figure 1.3: Sustainable Development Goals[13]

The first three SDGs are closely linked to nutrition as they highlight the importance of a number of issues related to poverty, health and disease:[12]

- Goal 1: End poverty in all its forms, everywhere.
- Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
- Goal 3: Ensure healthy lives and promote well-being for all at all ages.

These goals target the eradication of extreme poverty as well as the reduction of the number of people living in poverty, ending hunger and ensuring people have access to safe nutritious food in sufficient quantities all year round, reducing maternal and under-5 mortality rates and addressing both communicable and non-communicable diseases (NCDs), amongst others.[12] All three targets are directly associated with nutrition and by achieving these goals, the nutritional status and health of individuals around the world will be improved.

1.2.2 Causes and consequences of malnutrition

The UNICEF conceptual framework describes the three levels of causes of malnutrition as immediate, underlying and basic causes (Figure 1.4).

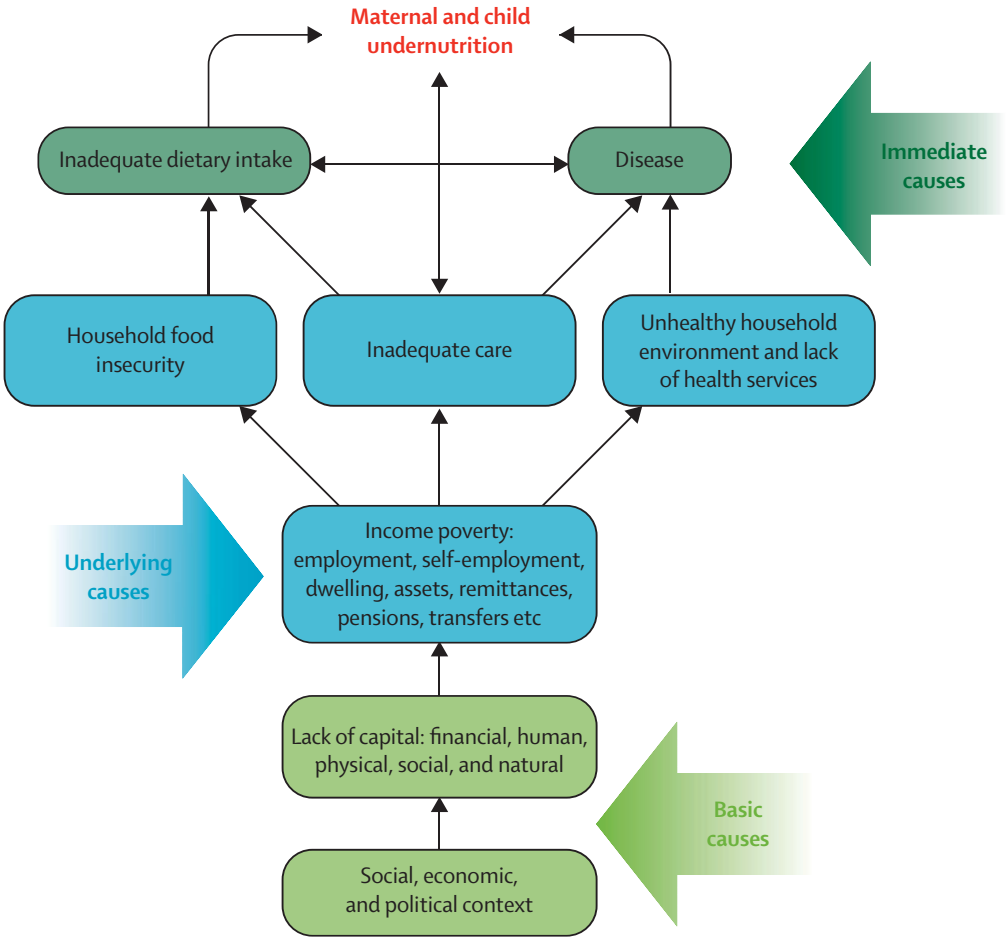


Figure 1.4: UNICEF conceptual framework on malnutrition[7]

Inadequate dietary intake and disease are the two immediate causes of malnutrition resulting in maternal and child undernutrition. Children often fall victim to a vicious cycle of poor nutrient intake, illness and malnutrition.[14] Malnourishment leads to an impaired immune status and an inability to fight infections, which in turn increase susceptibility to disease, specifically diarrhoea, pneumonia, malaria, HIV/AIDS and measles.[6,14] Adequate food intake is especially vital during the period from conception to a child's second birthday, known as the first 1000 days of life. During this time, nutritional requirements are elevated owing to crucial growth and developmental patterns.[6] An insufficient dietary intake, as well as increased nutritional requirements, are common consequences of disease and malnutrition, and are known to intensify the lethal cycle.[14]

Household food insecurity, inadequate care of women and children, and an unhealthy household environment, and insufficient health services are listed as underlying causes of malnutrition, as these factors directly lead to an inadequate dietary intake or to disease. Household food security refers to sustainable access to food of an adequate quality and quantity to meet the needs of all the members of the household. Food insecurity often results in inadequate dietary intake and malnutrition, which affect the most vulnerable individuals in the family, namely women and young children. An inability to utilise and access health care services, together with poor sanitation and poor access to water, can also result in the spread of infectious diseases.[14]

Underlying causes of malnutrition often stem from basic causes such as poor distribution or a lack of resources resulting from political, social, economic and technological factors.[15]

The effects of childhood undernutrition are vast. Short-term consequences include morbidity, mortality and disability. The South African Medical Research Council's Rapid Mortality Surveillance Report of 2014 indicated that the under-5 mortality rate in South Africa is 39 per 1000 live births.[16] Malnutrition is associated with approximately half of these deaths.[17]

Undernutrition can also influence human capital. The cognitive and motor development of children is negatively affected, thereby impacting on school performance and education. School achievement is reduced, leading to detrimental effects on future income and productivity in the workplace.[18] The early onset of undernutrition, particularly stunting in the first 1000 days, has also been shown to impair brain development. These effects are irreversible and thus interventions are increasingly focused on this period.[6] Stunted children are not only shorter than they should be, they are more inclined to fall ill. Later in life, stunted children also have a greater risk of rapid weight gain, resulting in them becoming overweight and developing a number of NCDs, such as type 2 diabetes mellitus, coronary heart disease, stroke and hypertension.[6]

1.3 The nutrition transition

Globally, major shifts are taking place in the population's dietary intake, physical activity levels and body composition, leading to rising levels of obesity and disease. These phenomena are collectively termed the nutrition transition and encompass two processes, namely demographic and epidemiological. The demographic transition refers to the shift from high rates of fertility and mortality to low rates of fertility and mortality, while the epidemiological transition refers to the shift from a high prevalence

of infectious diseases and malnutrition, to a high prevalence of chronic diseases of lifestyle.[19]

The nutrition transition is of major concern in South Africa, where both under- and overnutrition are present in communities and households. Dietary choices and habits are changing significantly to include energy-dense foods high in saturated fat, cholesterol and sugar and low in dietary fibre. Portion sizes are increasing and people are more inclined to consume takeaways, unhealthy snacks and high-sugar drinks. Activity levels are also changing and people are becoming less physically active as a result of technological advances, lifestyle factors and working conditions. Physical labour is less prominent in communities and more time is spent on sedentary entertainment. The changes in diet and activity levels are reflected in the population's body composition and nutritional status in the form of obesity, and the development of NCDs such as diabetes mellitus, cardiovascular disease, hypertension and dyslipidaemia.[19–21]

The nutrition transition results from various factors. Globalisation plays a significant role, resulting in changes in food production and distribution. Processed and pre-prepared meals are replacing fresh produce due to supply and demand. The mass media has also been a contributing factor by influencing diet and lifestyle choices through the advertising and marketing of unhealthy products.[20]

Interventions which address the nutrition transition have been suggested and include the introduction of fiscal policies and levies on high fat, salty or sugary foods and beverages; the promotion of health in schools; and regulating food labelling and marketing.[22]

1.4 Nutritional status of children in South Africa

A number of surveys have been conducted in South Africa over the last 20 years with the purpose of assessing the nutritional status of children aged 1–9 years of age. These include the South African Vitamin A Consultative Group (SAVACG, 1994), the National Food Consumption Survey (NFCS, 1999), the National Food Consumption Survey Fortification Baseline (NFCS-FB-I, 2005) and most recently the South African National Health and Nutrition Examination Survey (SANHANES, 2012).

1.4.1 Undernutrition

Undernutrition, in the form of stunting, underweight, and wasting, is an extensive problem in South Africa. Stunting, underweight and wasting are classified as a height-for-age, weight-for-age and weight-for-height of < -2 standard deviation, respectively. The prevalence of these conditions among children in South Africa can be seen in Table 1.2 and Figure 1.5.

Table 1.2: Prevalence of undernutrition in South African children from 1994–2012[8–10,23]

	SAVACG, 1994	NFCS, 1999	NFCS-FB-I, 2005	SANHANES, 2012
Stunting	22.9%	21.6%	23.4%	26.5%
Severe stunting	6.6%	6.5%	6.4%	9.5%
Underweight	9.3%	10.3%	11.0%	6.1%
Wasting	2.6%	3.7%	5.1%	2.2%

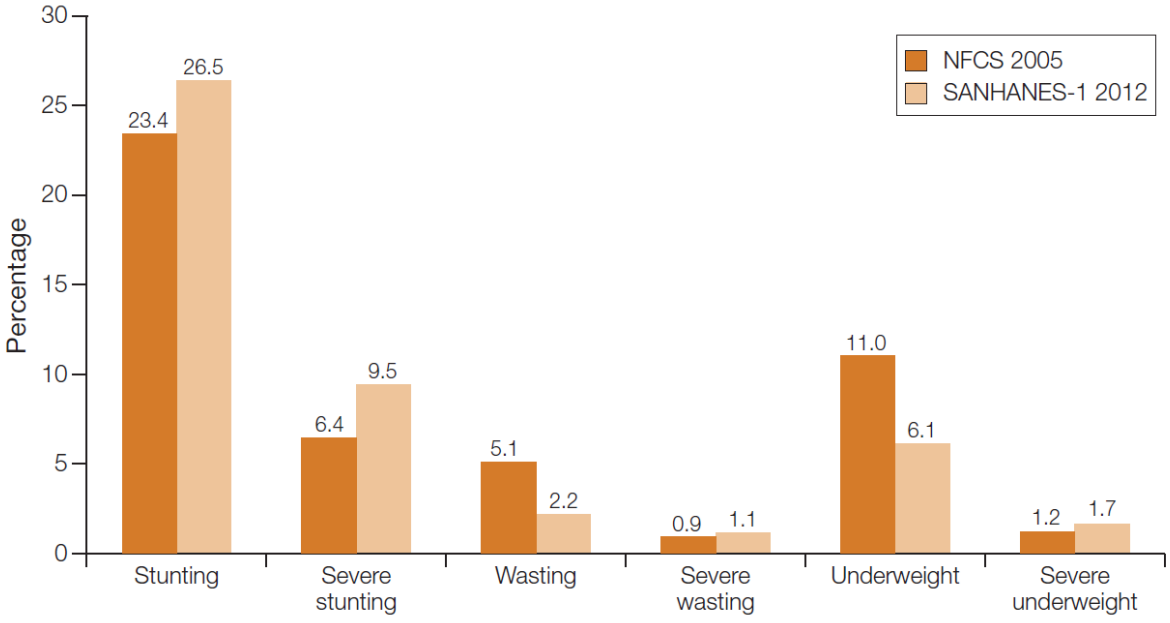


Figure 1.5: Prevalence of undernutrition in 1–3 year old children between 2005 and 2012[8]

The data from SANHANES (2012) shows a lower prevalence of wasting and underweight among children aged 1–3 years, compared with the other studies. Although this data seems promising, both stunting and severe stunting (classified as a height-for-age of < -3 standard deviation) were found to be at a higher prevalence.[8] The most alarming aspect of the SANHANES (2012) study is not only that it shows an increased prevalence

of stunting, but that it also indicates the prevalence of stunting in South Africa to be close to that of the 32.0% global rate.[7] The status of this specific indicator, together with adverse birth outcomes in South Africa, has led to the country being classified as one of the so-called 36 high-burden countries in the world.[7,24]

1.4.2 Overnutrition

The common term for the coexistence of under- and overnutrition is the "double burden of malnutrition" and it is a well-known phenomenon in South Africa.

A comparison of the prevalence of overnutrition between children aged 1–3 years in the NFCS-FB-I (2005) and 2–5 years in SANHANES (2012) can be seen in Table 1.3. Although the prevalence of obesity (classified as a weight-for-height of > +3 standard deviation) has remained virtually the same, the prevalence of overweight (classified as a weight-for-height of > +2 standard deviation) has almost doubled and is almost three times the global rate of 7%.[6,8]

Table 1.3: Prevalence of overweight in South African children[8]

	NFCS-FB-I, 2005	SANHANES, 2012
Overweight	10.6%	18.1%
Obesity	4.5%	4.6%

1.4.3 Micronutrient status of children in South Africa

Micronutrient malnutrition, often referred to as "hidden hunger", has been on the rise in low- and middle-income countries, with the most common deficiencies being Vitamin A and iron.[6,25] In South Africa, these micronutrient deficiencies are the most prevalent; however iodine and zinc have also been of concern.[10] In an effort to address iodine deficiency in the country, South Africa enforced the mandatory iodisation of table salt in 1995 with a revision in 2007.[26–28] The implementation of this programme was successful and led to the virtual elimination of iodine deficiency in the country.[10] Zinc deficiency has been reported to affect 45.3% of children, according to the NFCS-FB-I (2005).[10] Therapeutic zinc supplementation for children with diarrhoea, aged 6–36 months, has been included as a key intervention in South Africa's Roadmap for Nutrition (2013–2017). The need for this supplementation, together with salt iodisation, was highlighted in the 2008 Lancet Series on Maternal and Child Undernutrition.[1,29]

The individuals most at risk of developing micronutrient deficiencies include women of reproductive age, pregnant and lactating women, as well as children under the age of 5 years.[30] Increased requirements, financial constraints and the unavailability of micronutrient-dense foods remain the leading causes of micronutrient deficiencies worldwide.[25,30]

1.4.3.1 Vitamin A deficiency

Vitamin A is available from both animal and plant origins. Animal sources of Vitamin A include eggs, meat and dairy products, while plant sources include dark-green leafy vegetables and yellow/orange-coloured fruit and vegetables. Globally, 190 million children under the age of 5 years have Vitamin A deficiency (VAD).[31] Research indicates that major health concerns resulting from a poor Vitamin A status include inadequate growth, increased incidence of infections, xerophthalmia, as well as increased risk of death.[25,31] Xerophthalmia is a term used to describe complications of the eye resulting from a poor Vitamin A status and is referred to as the most preventable cause of blindness in children.[25,31] The first sign and symptom of xerophthalmia is night blindness, which is experienced by 11.9% of children in South Africa.[23] The prevalence of night blindness among children in the Western Cape province of South Africa is above that of the national figure, at 13.5%.[23]

The prevalence of VAD in South African individuals has been recorded in a number of surveys over the last 20 years. The current prevalence of 43.6% in children (Table 1.4) still constitutes a public health problem despite the initiation of the Vitamin A Supplementation (VAS) programme in 2002.[8,10,23]

Table 1.4: National prevalence of Vitamin A deficiency in South African children[8,10,23]

SAVACG 1994	NFCS-FB 2005	SANHANES 2012
33.3%	63.6%	43.6%

According to SAVACG (1994),[23] preschool children residing in rural areas or informal dwellings were found to have a poorer Vitamin A status than those living in urban areas or formal housing. Maternal education was also shown to have an effect on Vitamin A status. The Vitamin A status of children whose mothers had no or little formal education, was found to be poor, when compared with that of children with educated mothers.

1.4.3.2 Iron deficiency

Dietary iron comes in the form of heme and non-heme. Heme iron is found in meat products, while sources of non-heme iron include vegetables and fortified grains. Iron stores in the body are regulated by a number of factors, including the amount of iron consumed, the bioavailability of iron present in food, and iron absorption ability.[32] Iron bioavailability can be determined by the type of iron ingested (heme or non-heme iron), as well as phytates, polyphenols, vegetable proteins, calcium and Vitamin C.[32] Common causes of iron deficiency anaemia (IDA) include reduced intake, poor absorption, increased iron requirements, extreme blood loss, parasitic infections, and chronic infections such as HIV, tuberculosis and malaria.[33]

According to global statistics, 24.8% of the population suffer from anaemia, with the highest prevalence being among children of preschool age.[33] The prevalence of iron deficiency and IDA in South African children can be seen in Table 1.5 and Table 1.6, respectively.

Table 1.5: Prevalence of iron deficiency without anaemia in South African children[8,10,23]

SAVACG, 1994	NFCS-FB, 2005	SANHANES, 2012
4.8%	7.8%	8.1%

Table 1.6: Prevalence of iron deficiency anaemia in South African children[8,10,23]

SAVACG, 1994	NFCS-FB, 2005	SANHANES, 2012
5.0%	11.3%	1.9%

The SANHANES (2012) results indicate that iron deficiency in children has continued to rise. Despite this, IDA has reportedly improved significantly.[8]

1.5 Strategies to address malnutrition

In order to address malnutrition in South Africa, many interventions have been adopted by the Department of Health (DoH). The Integrated Nutrition Programme's Roadmap for Nutrition (2013–2017) is aimed at providing optimal nutrition for all South Africans.[1] To ensure this, the Roadmap has focused on directing all nutrition interventions towards four focus areas, namely increasing life expectancy, decreasing maternal and child mortality, combating HIV/AIDS and decreasing the burden of disease from tuberculosis, and strengthening health service effectiveness. The Roadmap highlights the importance of prioritising interventions to focus on key life stages, particularly the first 1000 days.[1] Bhutta et al. (2008)[29] reviewed a number of interventions for the prevention and treatment of maternal and child undernutrition (Figure 1.6).

Sufficient evidence for implementation in all 36 countries	Evidence for implementation in specific, situational contexts
Maternal and birth outcomes	
Iron folate supplementation	Maternal supplements of balanced energy and protein
Maternal supplements of multiple micronutrients	Maternal iodine supplements
Maternal iodine through iodisation of salt	Maternal deworming in pregnancy
Maternal calcium supplementation	Intermittent preventive treatment for malaria
Interventions to reduce tobacco consumption or indoor air pollution	Insecticide-treated bednets
Newborn babies	
Promotion of breastfeeding (individual and group counselling)	Neonatal vitamin A supplementation
	Delayed cord clamping
Infants and children	
Promotion of breastfeeding (individual and group counselling)	Conditional cash transfer programmes (with nutritional education)
Behaviour change communication for improved complementary feeding*	
Zinc supplementation	Deworming
Zinc in management of diarrhoea	Iron fortification and supplementation programmes
Vitamin A fortification or supplementation	Insecticide-treated bednets
Universal salt iodisation	
Handwashing or hygiene interventions	
Treatment of severe acute malnutrition	

*Additional food supplements in food-insecure populations.

Figure 1.6: Interventions for the prevention and treatment of maternal and child undernutrition[29]

These interventions are broken down into three categories, namely maternal and birth outcomes, newborn babies, and infants and children. The reasoning, rationale and interventions contained in the Roadmap correspond with Bhutta et al., as the content of the Roadmap was based on the findings of the 2008 and 2013 Lancet Series.[1,29] Interventions specifically aimed at children include breastfeeding promotion, improved complementary feeding practices, zinc and Vitamin A supplementation, food fortification, salt iodisation, hand washing, and the treatment of severe acute malnutrition (SAM).[29]

The IYCF policy is one intervention in South Africa aimed at promoting optimal feeding practices for infants and young children, to improve their nutritional status and overall health.[34] The policy focuses on key interventions and programmes such as the promotion, protection and support of breastfeeding, appropriate complementary feeding, and the International Code of Marketing of Breastmilk Substitutes, amongst others. These programmes promote exclusive and continued breastfeeding, as well as the avoidance of the early introduction of complementary foods.[34]

The Mother-Baby Friendly Initiative (MBFI), previously known as the Baby Friendly Hospital Initiative (BFHI), was launched in South Africa in 1993 and is also included in the IYCF policy.[34,35] The initiative aims at transforming hospitals and maternity units into institutions that are “baby friendly” through the implementation of the Ten Steps to Successful Breastfeeding.[35] The support for breastfeeding is further highlighted in the Tshwane Declaration of support for breastfeeding in South Africa, which was signed in 2011 by various stakeholders. The resolutions agreed upon include the implementation of MBFI in all hospitals (public and private), the legislation of the International Code of Marketing of Breastmilk Substitutes, and the discontinuation of the provision of infant formula in the Prevention of Mother-to-Child Transmission (PMTCT) programme, amongst others.[36]

The Road-to-Health Booklet (RtHB) was launched by the DoH in October 2010 and was implemented in February the following year. It replaced the Road-to-Health Chart (RtHC), to provide a more complete assessment of the health of infants and young children. In addition to the World Health Organization (WHO) growth charts and immunisations, the RtHB also provides details of the child and family, neonatal information, HIV information, Vitamin A supplementation and deworming treatment, developmental screening, and oral health, as well as health promotion messages. Despite these messages providing families with essential IYCF information from birth to 5 years, as well as additional information on play and communication, and feeding during times of illness, they were not tested for understanding and make the case for the need for standardised paediatric health messages.

1.6 The development of Food-Based Dietary Guidelines

1.6.1 Background

In order to address issues surrounding nutrition and food consumption, an International Conference on Nutrition was held in Rome in December 1992 by the FAO and WHO.[3,37] The World Declaration and Plan of Action for Nutrition was formulated, with the purpose of eliminating or reducing famine, starvation, nutritional and micronutrient deficiency diseases, diet-related communicable and non-communicable diseases, and inadequate sanitation and hygiene practices.[3,37] In response to this conference, another FAO/WHO consultation was held in Nicosia, Cyprus, in March 1995, on the Preparation and Use of the Food-Based Dietary Guidelines (FBDGs).[3] The aim of this consultation was to form a foundation for the development and use of food-based dietary guidelines.[3]

1.6.2 Food-Based Dietary Guidelines for the general population

The development of South African FBDGs for the general population was initiated by the Nutrition Society of South Africa (NSSA) in 1997, with the aim of developing a set of guidelines for South African individuals to empower and educate them to change their eating behaviour.[38,39] Prior to the development of the guidelines, a working group established various characteristics, indicating that FBDGs should:[38]

- Include only one simple message per guideline
- Be user-friendly
- Be formulated in a positive way
- Be compatible with various cultures and eating patterns
- Include foods that are affordable, accessible and commonly consumed
- Be sustainable
- Encourage environmentally friendly agriculture
- Address both under- and overnutrition
- Address country-specific nutritional health problems
- Emphasise the joy of eating

Based on these characteristics, a set of preliminary FBDGs was developed. Testing of these took place in two provinces in South Africa in the form of focus groups in four different languages, namely English, Afrikaans, Zulu and Xhosa. The guidelines were then revised to incorporate the results of the testing.[38] In 2003, the FBDGs were officially adopted by the DoH. These eleven FBDGs were aimed at individuals over the age of 7 years.[2]

The most recent revision of the FBDGs took place in 2011. In order to ensure that the guidelines are up to date with the most recent scientific evidence, they require regular revision. The development of South Africa's first food guide also prompted the revision of the FBDGs as a means to ensure that the two tools could be used in conjunction to promote healthier dietary practices.[39] The food guide was developed in 2011 by the DoH, together with the Directorate of Nutrition and the FAO. It is a visual tool indicating various food groups readily available and commonly consumed by South Africans (Figure 1.7).[2,40] These food groups are portrayed in the relative quantities that should be consumed daily.[40]

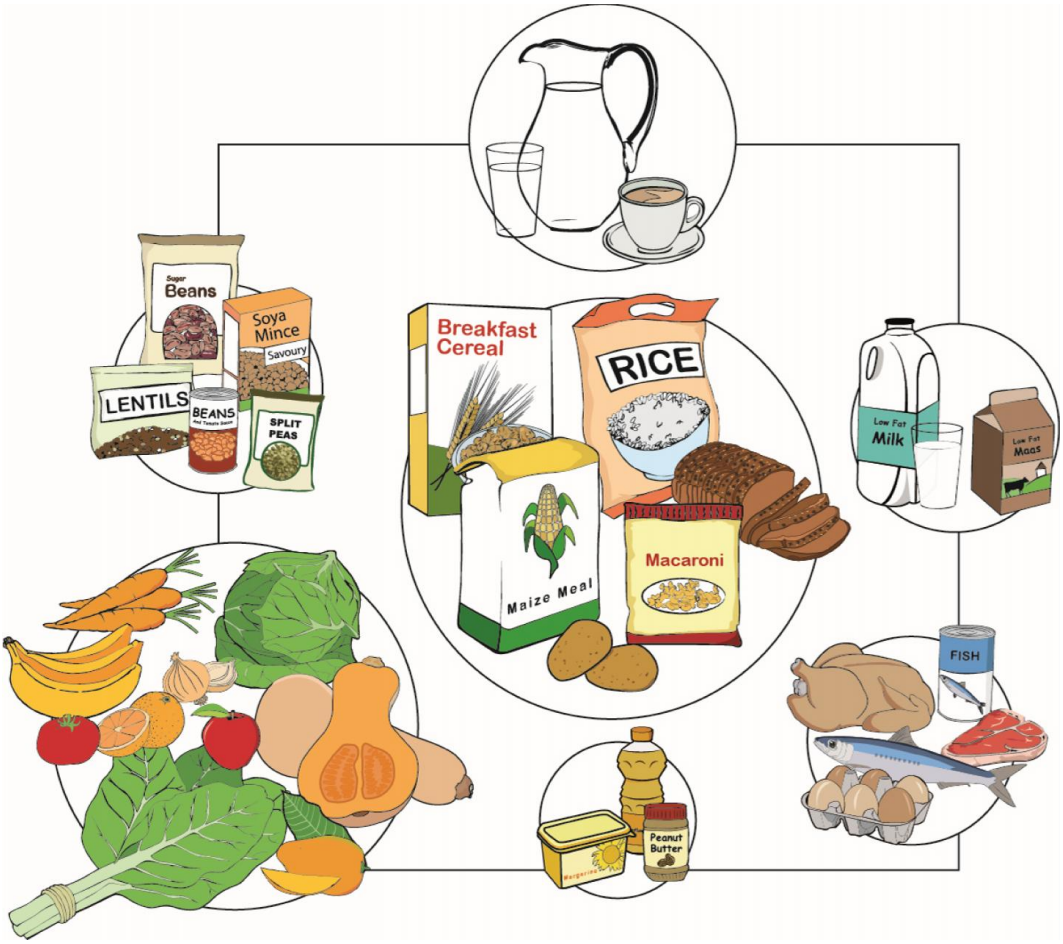


Figure 1.7: The South African food guide[40]

The FBDGs were also revised as a means to eliminate misinterpretation, particularly the guideline on alcohol consumption. Many professionals reported that the guideline was often misinterpreted as encouraging the intake of alcohol. The revision of the FBDGs offered the opportunity to revisit the proposed but unadopted paediatric guidelines.[39] The current FBDGs for South Africans, as after the latest revision, are seen in Table 1.7. An additional guideline was added to also cover dairy products, while the guideline on alcohol consumption was removed.[2]

Table 1.7: Comparison of the 2003 and 2012 Food-Based Dietary Guidelines[40]

First set of FBDGs, 2003	Revised general FBDGs, 2012
Enjoy a variety of foods	Enjoy a variety of foods
Make starchy food the basis of most meals	Make starchy food part of most meals
Chicken, fish, meat, milk or eggs could be eaten daily	Fish, chicken, lean meat or eggs could be eaten daily
-	Have milk, maas[a] or yoghurt every day
Eat plenty of vegetables and fruit every day	Eat plenty of vegetables and fruit every day
Eat dry beans, peas, lentils and soya regularly	Eat dry beans, split peas, lentils and soya regularly
Use salt sparingly	Use salt and food high in salt sparingly
Use fats sparingly	Use fat sparingly; choose vegetable oils rather than hard fats
Use food and drinks containing sugar sparingly and not between meals	Use sugar and food high in sugar sparingly
Drink lots of clean safe water	Drink lots of clean safe water
Be Active!	Be Active!
If you drink alcohol, drink it sensibly	-

[a]Maas refers to a traditional fermented milk product prepared by seeding unpasteurised whole cow's milk with a microbial inoculum for fermentation.[41]

1.6.3 Food-Based Dietary Guidelines for children

In 2007, the NSSA working group developed a set of Paediatric Food-Based Dietary Guidelines (PFBDGs) for infants and young children under the age of 7 years. These guidelines included the age categories: 0–6 months, 6–12 months and 1–7 years (Figure 1.8). The PFBDGs were however not officially endorsed by the DoH, since they were only tested in the Western Cape and not on a national representative sample, mainly owing to a lack of funds and research capacity.[2]

Birth to 6 months	>6 months to <12 months	>1 to <7 years	Children >7 years, adolescents, adults
1. Enjoy time with your baby 2. Breastfeeding is best for your baby for the first 6 months	1. Enjoy time with your baby 4. Keep breast feeding your baby 6. Teach your baby to drink from a cup 2. From 6 months start giving your baby small amounts of solid foods 3. Increase your baby's meals to five times a day	2. Feed children five small meals a day 1. Encourage children to enjoy a variety of foods	1. Enjoy a variety of foods
3. Clean your baby's mouth regularly 4. Take your baby to the clinic every month	5. Offer your baby clean, safe water regularly 7. Take your baby to the clinic every month	8. Offer children clean, safe water regularly 6. Take children to the clinic every 3 months	9. Drink lots of clean, safe water
		7. Encourage children to be active every day	2. Be active
		3. Make starchy foods the basis of a child's main meals	3. Make starchy foods the basis of most meals
		4. Children need plenty of vegetables and fruits every day	4. Eat plenty of vegetables and fruits every day
		5. Children need to drink milk every day	5. Eat dry beans, peas, lentils and soy regularly
		9. Children can eat chicken, fish, meat, eggs, beans, soya or peanut butter every day	6. Chicken, fish, milk, meat or eggs could be eaten daily 7. Eat fats sparingly 8. Use salt sparingly 10. If you drink alcohol, drink sensibly
		10. If children have sweet treats or drinks, offer small amounts with meals	11. Use food and drinks containing sugar sparingly and not between meals

Figure 1.8: Paediatric Food-Based Dietary Guidelines 2007[42]

In 2011, the NSSA paediatric working group revised and adjusted the guidelines to include children between the ages of 0–5 years, rather than 0–7 years. This was done to correspond with the age category of many childhood indicators, as well as with the age category focus of the RtHB. They also revised the age categories to include 0–6 months, 6–12 months, 12–36 months and 3–5 years.[2] The current, revised PFBDGs are depicted in Table 1.8.

Table 1.8: Revised Paediatric Food-Based Dietary Guidelines[2]

0–6 months	Give only breast milk, and no other foods or liquids, to your baby for the first six months of life
6–12 months	At six months, start giving your baby small amounts of complementary foods, while continuing to breastfeed to two years and beyond
	Gradually increase the amount of food, number of feeds and variety as your baby gets older
	Feed slowly and patiently and encourage your baby to eat, but do not force him or her
	From six months of age, give your baby meat, chicken, fish or egg every day, or as often as possible
	Give your baby dark-green leafy vegetables and orange-coloured vegetables and fruit every day
	Start spoon-feeding your baby with thick foods, and gradually increase to the consistency of family food
	Hands should be washed with soap and clean water before preparing or eating food
	Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your baby
12–36 months	Continue to breastfeed to two years and beyond
	Gradually increase the amount of food, number of feedings and variety as your child gets older
	Give your child meat, chicken, fish or egg every day, or as often as possible
	Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day
	Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child
	Hands should be washed with soap and clean water before preparing or eating food
	Encourage your child to be active
	Feed your child five small meals during the day
	Make starchy foods part of most meals
	Give your child milk, maas or yoghurt every day

3–5 years	Enjoy a variety of foods
	Make starchy foods part of most meals
	Lean chicken or lean meat or fish or eggs can be eaten every day
	Eat plenty of vegetables and fruit every day
	Eat dry beans, split peas, lentils and soya regularly
	Consume milk, maas or yoghurt every day
	Feed your child regular small meals and healthy snacks
	Use salt and foods high in salt sparingly
	Use fats sparingly. Choose vegetable oils, rather than hard fats
	Use sugar and food and drinks high in sugar sparingly
	Drink lots of clean, safe water and make it your beverage of choice
	Be active!
	Hands should be washed with soap and clean water before preparing or eating food

1.7 Evidence-based support for Paediatric Food-Based Dietary Guidelines for children aged 12–36 months

In this section, the evidence that supports the appropriateness of the PFBDGs for children aged 12–36 months is explored.

1.7.1 Guideline 1: "Continue to breastfeed to two years and beyond"

The WHO recommendation for breastfeeding states that infants should be exclusively breastfed from birth to six months of age.[43] The optimal duration of breastfeeding, particularly exclusive breastfeeding, has been a debated topic in the past. However, evidence has shown that exclusive breastfeeding for the first six months has multiple benefits and meets the nutritional requirements of infants.[44–48]

Exclusive breastfeeding during the first six months of an infant's life assists with gut function and serves as protection against gut-related illnesses.[44] The immune system of infants is also enhanced through the provision of antibodies from the mother in the breast milk.[44] Evidence shows that prior to six months, infants are not developmentally ready to receive complementary foods.[44]

Butte et al.[45] reviewed the nutritional adequacy of exclusive breastfeeding in infants and found that both the energy and protein content of breast milk meet average infant requirements during the first six months. The Vitamin A content of breast milk was also found to be sufficient in the first six months, provided the mother is well nourished.[45]

A systematic review by Kramer and Kakuma[46] compared health outcomes of infants exclusively breastfed for six months to infants exclusively breastfed for only 3–4 months. It was revealed that infants exclusively breastfed for six months had no growth deficits and had a reduced risk of developing a gastrointestinal infection, compared with infants who were exclusively breastfed for a shorter duration of time. Mothers of these infants also showed prolonged lactational amenorrhoea and greater postpartum weight loss, compared with those who exclusively breastfed their infants for only 3–4 months.[46]

The long- and short-term effects of breastfeeding on maternal health outcomes were reviewed by Chowdhury et al.[47] Similar results were found with regard to greater lactational amenorrhoea among mothers who breastfed exclusively. It was also found that breastfeeding for an extended period of time (more than 12 months) had a

protective effect against both breast and ovarian carcinoma and reduced the risk of developing type 2 diabetes mellitus.[47] The 2016 Lancet Breastfeeding Series reported similar results in terms of breast cancer and ovarian cancer protection, as well as improved birth spacing.[48]

Continued breastfeeding beyond six months is strongly encouraged by the WHO and IYCF policies, stating that breastfeeding should be continued for up to two years of age and beyond.[43,49] Breastfeeding is not only associated with multiple benefits in the first six months of life, but also plays a vital role in a child's dietary intake post six months, if continued. It also contributes to the health status of the child beyond the first year and continues to provide high amounts of energy and fat for growth and development.[49,50] Breastfeeding is known to play an important role during illness by preventing dehydration and by assisting with recovery.[50] It has also been associated with a reduced risk of overweight in infants and children.[48,51]

Poor infant feeding practices, particularly suboptimal breastfeeding, lead to inadequate growth and subsequently increased mortality rates. Not only does suboptimal breastfeeding result in 12% of all under-5 child deaths, it is also responsible for 10% of the disease burden in children under the age of 5 years.[7]

The 2016 Lancet Breastfeeding Series reported on breastfeeding indicators according to country income groups, namely low income, lower-middle income, upper-middle income and high income (Figure 1.9).

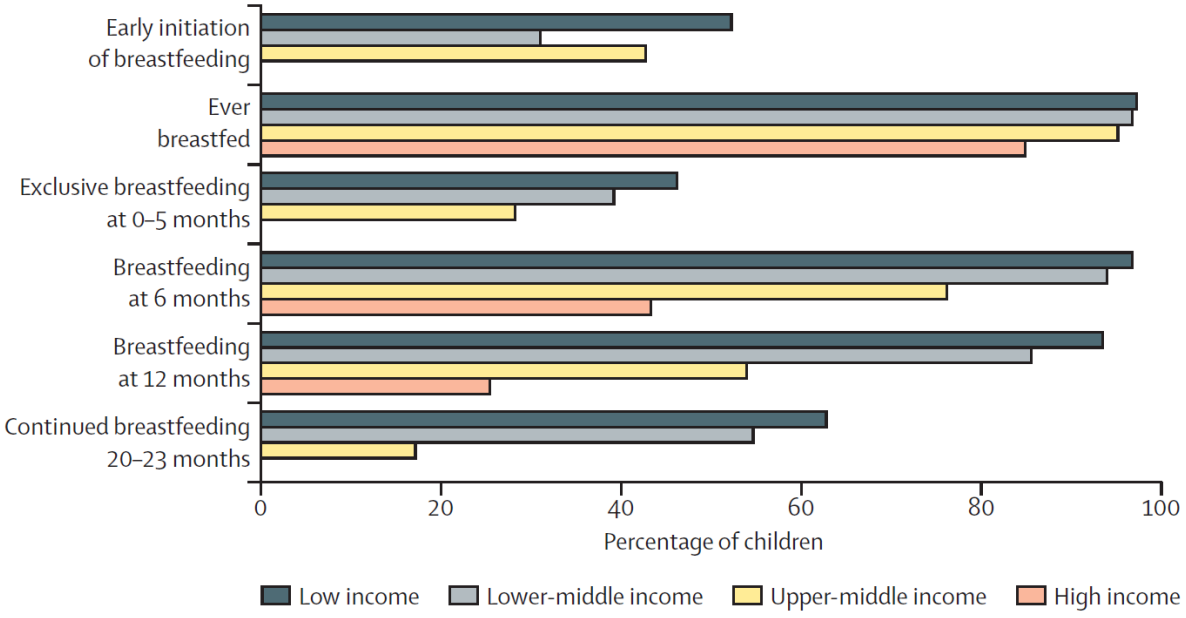


Figure 1.9: Breastfeeding indicators by country income group in 2010[48]

Results showed that breastfeeding amongst all ages was more prevalent in low-income countries compared with high-income countries. Early initiation of breastfeeding and exclusive breastfeeding rates remain low amongst all countries. It was also reported that a mere 37% of infants under the age of six months are exclusively breastfed in low- and middle-income countries, while globally, continued breastfeeding at 12–15 months dropped from 76% to 73.3%.[48]

Breastfeeding rates in South Africa (Table 1.9) are also poor. Despite a high breastfeeding initiation rate, only 8% of infants under six months are exclusively breastfed.[52] The duration of exclusive breastfeeding as well as extended breastfeeding in the country is thus concerning, especially when taking into account the high rates of malnutrition.[53]

Table 1.9: Breastfeeding status in South Africa according to child's current age, 1998–2003[52,54]

	SADHS 1998	SADHS 2003
Breastfed at some time	86.7%	81.5%
Exclusively breastfed		
0–3 months	10.4%	11.9%
0–6 months	7%	8.3%
Not breastfeeding		
0–3 months	16.6%	20.1%

1.7.2 Guideline 2: "Gradually increase the amount of food, number of feedings and variety as your child gets older"

Complementary feeding guidelines suggest that nutritionally adequate and safe complementary foods be introduced to infants at six months (180 days).[43,49] The introduction of complementary foods at this age is necessary, as breast milk alone cannot meet the growing demands of the infant. Therefore, additional food is required together with breast milk.[49]

The amount of complementary food given to a child should be increased as the child gets older. The energy requirements from complementary foods are shown in Table 1.10. These requirements are based on an "average" breast milk intake.[49]

Table 1.10: The energy requirements from complementary foods for infants with an "average" breast milk intake[49]

	6–8 months	9–11 months	12–23 months
Developing countries	200 kCal	300 kCal	550 kCal
Industrialised countries	130 kCal	310 kCal	580 kCal

Determining the energy content of the actual amount of breast milk and complementary food consumed can be challenging. Responsive feeding therefore plays a vital role in ensuring that infants and children receive adequate amounts of complementary foods for optimal growth and development.[55] The concept of responsive feeding refers to the relationship between a child and the mother/caregiver, characterised by the child communicating their feelings of hunger and satiety through certain oral and non-verbal cues, which could include motor actions, facial expressions or vocalisation.[55] The principles of responsive feeding include:[49]

- feeding infants directly and assisting older children when they feed themselves, being sensitive to their hunger and satiety cues;
- feeding slowly and patiently, and encouraging children to eat, but not forcing them;
- if children refuse many foods, experimenting with different food combinations, tastes, textures and methods of encouragement;
- minimising distractions during meals if the child loses interest easily; and
- remembering that feeding times are periods of learning and love – talk to children during feeding, with eye to eye contact.

These techniques have been shown to assist with the growth and development of children as well as promoting optimal food intake.[55]

Food consistency and variety are also to be increased gradually as the child gets older. The consistency of the foods offered to infants depends largely on their age and development. Providing children with foods of an inappropriate consistency can lead to them being unable to consume adequate amounts of food, therefore resulting in

growth problems.[49] Delaying the introduction of certain solid consistencies can also have detrimental effects.[49] Northstone et al.[56] found that children who were introduced to lumpy foods at or later than 10 months displayed feeding difficulties and consumed a smaller variety of foods, compared with children who were exposed to lumpy foods at an earlier age. According to complementary feeding guidelines, at six months infants should be offered pureed, mashed and semi-solid foods.[49] Finger foods should be offered by 8 months, and by 12 months children should be eating the same food as the rest of the family.[49]

Introducing a variety of foods to a child is essential to ensure that their dietary needs for energy, protein and micronutrients are met.[49] According to the WHO, infants should receive foods high in protein, and fruit and vegetables rich in Vitamin A, as well as dairy products. The diet should also contain adequate amounts of fat.[49]

1.7.3 Guideline 3: "Give your child meat, chicken, fish or egg every day, or as often as possible"

The European Society for Pediatric Gastroenterology, Hepatology, and Nutrition Committee (ESPGHAN) recommends that the complementary feeding diet of infants should include good sources of iron (from meat) and long-chain-polyunsaturated-fatty-acids (from oily fish),[57] while the WHO recommends that meat, chicken, fish or eggs be eaten every day, or as often as possible.[49] These animal products are a rich source of protein, energy and various micronutrients essential for growth and development. Some micronutrients in animal products, such as iron and zinc, are more easily absorbed than those present in plant-based foods, while Vitamin B12 requirements cannot be met through any source other than animal products or supplementation.[58,59] Animal products also have a higher fat content than plant-based products, making them more energy dense and a source of fat-soluble vitamins and essential fatty acids.[59] The NFCS (1999) reported that the mean protein intake of 1–9 year old children was above the RDA, however more than 50% of the protein consumed was from plant origin.[9]

The consumption of animal products is therefore important; however the cost thereof is high, relatively more so for families with a low socio-economic status. In order to address this problem, families are often encouraged to provide small portions of animal products to children or to purchase economical sources of animal products, such as liver and eggs.[59,60]

With regard to infants and children consuming vegetarian diets, it is recommended that fortified products and supplementation be provided, as vegetarian diets cannot meet nutritional requirements.[49]

1.7.4 Guideline 4: "Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day"

Fruit and vegetables are an integral part of a healthy diet and contain essential vitamins, micronutrients, fibre and antioxidants. These essential components have a protective effect, and without them the risk of disease increases.[61] The 2002 World Health Report lists high blood pressure, high cholesterol, overweight, a lack of physical activity and a low intake of fruit and vegetables as the main diet-related risk factors associated with diseases of lifestyle.[21] A low fruit and vegetable intake results in 19% of gastrointestinal cancers, 31% of ischaemic heart diseases and 11% of stroke. Globally, it was also associated with 4.9% of deaths and 1.8% of the disease burden.[21]

Fruit and vegetable intakes in South Africa remain poor. It is recommended that children between the ages of 1–7 years consume 4–6 servings or 320–480g of fruit and vegetables per day.[62,63] However, according to a secondary analysis of the NFCS data from 1999, the average fruit and vegetable intake of 1–3 year old South African children was 180.2g per day. It was also reported that only 55.3% of children within this age category consumed fruit and vegetables and the frequency of intake was 2.06 times per day.[64]

Not only is fruit and vegetable intake in South Africa suboptimal, the micronutrient status of children is also of grave concern, especially Vitamin A and iron.[9] In order to address these issues, the intake of dark-green leafy vegetables and orange-coloured vegetables and fruit has been recommended. According to the WHO, "Vitamin A-rich fruits and vegetables should be eaten daily".[49]

By increasing the intake of fruit and vegetables, the risk of nutrition-related diseases has been shown to decrease. It has also been associated with improved dietary diversity and an increased intake of micronutrients.[65]

The contribution of dark-green leafy vegetables to the total micronutrient intake of children between the ages of 2 and 5 years living in KwaZulu-Natal in South Africa was assessed by Faber et al.[66] It was reported that the intake of dark-green leafy vegetables in children led to improvements in the intake of a number of micronutrients. Intake of these vegetables contributed 19–39% of iron intake and as much as 42–68% of Vitamin A, in 2–5 year old children.[66] Another study by Faber et al.[67] assessed the impact of food gardens on the intake of yellow and dark-green leafy vegetables and on the serum retinol concentrations of children between the ages of 2 and 5 years. According to the findings, the intake of yellow and dark-green leafy vegetables as well as the serum retinol concentrations improved significantly as a result of the food gardens.[67]

Recommendations on fruit and vegetable intake suggest that from the age of six months, infants should receive puréed and mashed fruit and vegetables. As children get older, parents should provide them with small pieces of fruit and vegetables, while being conscious of hard pieces that may result in choking. Children should also receive fruit and vegetables with varying tastes, textures and colours.[63]

1.7.5 Guideline 5: "Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child"

According to the WHO, drinks such as tea, coffee and sugary drinks should be avoided, while the intake of fruit juice should be limited.[49]

The intake of tea and coffee is not recommended for infants and young children, due to their low nutritional value and effect on iron absorption.[49] The polyphenols in tea and coffee inhibit iron absorption by binding non-heme iron, which may result in a poor iron status.[68]

Sugar intake among children is of concern as it is one of the biggest dietary causes of the formation of dental caries. Evidence shows that both the frequency and amount of sugar consumed increase the risk of dental caries.[69] Reducing a child's frequency of and exposure to food and drinks containing sugar, forms a major part of nutrition education for parents, aimed at reducing dental caries in children.[70] Guidelines for parents include avoiding frequent consumption of sugary drinks, avoiding putting a child to sleep with a bottle containing milk or a sugary drink, discouraging the intake of slowly eaten sugary foods, encouraging the intake of non-cariogenic snacks, and promoting good oral hygiene.[70]

The intake of sugar is also associated with weight gain. A systematic review investigating the association between sugary drinks and weight gain reported that among both children and adults, an increased intake of sugary drinks led to greater weight gain and an increased risk of obesity. It was also found that when the intake of sugary drinks was reduced, body weight improved and the prevalence of overweight decreased.[71]

Limiting the intake of fruit juice in children is recommended as it often displaces nutrient-dense foods. It is also associated with loose stools and a reduction in appetite when consumed in high amounts.[49] Guidelines suggest that no more than 120–180ml of fruit juice be consumed per day.[72,73]

Secondary analysis of the 1999 NFCS reported that the three main sources of added sugar in the diet of 1–9 year old children were white sugar, cool drinks and carbonated cool drinks. The consumption rate among children aged 1–3 years of white sugar was 76.2%, cool drinks was 10.8% and carbonated cool drinks was 3.5%. It was also noted that among 4–8 year old children, higher intakes of added sugar were associated with overweight and obesity. A high sugar intake was also reported to result in a reduced micronutrient intake in both age groups.[74]

A study conducted in Mexico investigating the feeding practices of infants and toddlers indicated that 68% and 64% of children aged 12–24 months consumed high-fat snacks and sugary drinks at least once per week, respectively. It was also reported that children consuming high-fat snacks and sugary drinks more than once a week were more likely to be overweight or obese.[75] Among younger children, the intake of unhealthy snacks is also high. A study in KwaZulu-Natal in South Africa found that 42% of infants aged 6–12 months consumed savoury snacks most days of the week.[76]

1.7.6 Guideline 6: "Hands should be washed with soap and clean water before preparing or eating food"

Hygiene is an important aspect of food preparation and IYCF. In order to ensure the safe preparation and storage of complementary foods, the WHO recommends the following:[49]

- washing caregivers' and children's hands before food preparation and eating;
- storing foods safely and serving foods immediately after preparation;
- using clean utensils to prepare and serve food;
- using clean cups and bowls when feeding children;
- avoiding the use of feeding bottles, which are difficult to keep clean.

Good hygiene practices, specifically hand washing with soap, have beneficial effects on public health. A systematic review of the effect hand washing has on the risk of diarrhoea reported positive results.[77] It was found that the risk of developing diarrhoeal diseases could be reduced by as much as 47% through the promotion of hand washing with soap. Fewtrell et al.[78] found similar results in that hygiene interventions in the form of hygiene education and the promotion of hand washing, reduced the risk of diarrhoea. Hand washing with antibacterial soap has also been shown to be superior in removing bacteria when compared with hand washing with water alone.[79]

1.7.7 Guideline 7: "Encourage your child to be active"

With obesity and NCDs on the rise, the promotion of physical activity is essential for public health. Regular physical activity has been associated with reducing the risk of many NCDs, including heart disease, diabetes mellitus, stroke, hypertension and cancer and also has health benefits for children such as improved bone density and body weight.[80,81] Activity also forms an integral part of the physical growth and development of children. For children to develop optimally, they require motor and cognitive skills which can be gained through active play and physical activity.[82]

The importance of activity in the prevention of childhood overweight and obesity is highlighted in a report by the American Academy of Pediatrics.[83] It recommends that physical activity be promoted in homes, schools and communities, and time in front of the television be limited to two hours a day.

Guidelines for infants suggest that they should be placed on their stomach on the floor in a stimulating environment. This will allow them to move and crawl freely, encouraging the development of motor skills.[82,84] Recommendations for toddlers and preschoolers suggest that they should be exposed to 30 and 60 minutes of structured activity per day, respectively, with a minimum of 60 minutes of unstructured physical activity. Activities should take place indoors and outdoors and should allow for the development of skills.[85]

1.7.8 Guideline 8: "Feed your child five small meals during the day"

According to the WHO, the frequency of complementary feeds should be increased as a child gets older.[49] The average healthy breastfed infant or young child should receive 2–3 meals per day at 6–8 months, 3–4 meals per day at 9–11 and 12–24 months, with 1–2 additional nutritious snacks.[49] Snacks refer to "foods eaten between meals – usually self-fed, convenient and easy to prepare".[49] More frequent meals may be necessary if the energy density or the quantity of the meal provided is low. For infants that are still breastfeeding, providing too many meals during the day could however negatively influence the intake of breast milk.[49]

As a result of their small stomach capacity, infants require small frequent meals throughout the day. These meals should be energy dense to meet their high dietary requirements. The recommended energy density of complementary foods should therefore be at least 0.8kcal/g.[49]

1.7.9 Guideline 9: "Make starchy foods part of most meals"

This guideline is part of both the adult and paediatric FBDGs and aims to encourage the intake of adequate amounts of dietary carbohydrates, rich in starch.[2] Starchy foods are a rich source of energy, fibre and micronutrients and form an important part of the diet of adults and children. Foods rich in starch refer to grains, cereals (wheat, maize, rice, oats, sorghum), legumes (dried beans, lentils, peas, soya), as well as root vegetables (potatoes and sweet potatoes). Infants should be exposed to starchy foods from age six months onwards, to ensure that they form part of most meals by age one year.[86]

The FAO and WHO recommend that from the age of two years, at least 55% of total energy intake should come from a variety of carbohydrate sources.[87] Children under the age of two years have slightly lower carbohydrate requirements, as fat intake during this time is very high.[87] A South African survey reported that the intake of carbohydrates amongst 1–9 year old children was 62% of the total energy intake, which is above the recommended amount.[9]

Starchy foods form a big part of the South African diet. The 1999 NFCS reported that according to food frequency data, maize, vegetables (potato and sweet potato) and white rice were three of the five foods consumed most often by children, with maize being consumed by 93% of children under the age of nine years.[9] A study in rural KwaZulu-Natal also reported high intakes of maize, with 88% of children aged 6–12 months consuming soft maize meal porridge at least four days per week.[76]

Fibre intake is important to consider when encouraging the intake of starchy foods. The fibre content of foods should not be too high or too low as it could result in negative effects such as constipation, diarrhoea or malabsorption.[88] Guidelines suggest that the recommended daily amount of fibre for children between the ages of two and five years should be 15g per day, while other guidelines for children over the age of three years suggest that the intake of fibre should be equivalent to their age plus 5g.[89,90] No clear guidelines for children younger than two years exist; however it is recommended that from the age of six months, infants receive a wide variety of carbohydrate-based foods including whole grains, legumes, fruit and vegetables.[89]

1.7.10 Guideline 10: "Give your child milk, maas or yoghurt every day"

Dairy products are an important component in the diets of infants and young children and contain high amounts of protein, fat, calcium and various other micronutrients necessary for adequate growth and development.[91]

The intake of milk and other animal-source products by children in low-income countries is associated with improved growth, micronutrient status, cognitive development and physical activity levels. It is also known to reduce nutritional deficiencies as well as morbidity and mortality rates.[91]

Milk intake in childhood is also associated with improved bone health. A study investigating the association between childhood milk intake and adult bone density, found that women consuming small amounts of milk during childhood had a 5.6% lower bone mineral content than those with a high intake of milk. It was also reported that individuals with a low intake of milk during childhood had a greater risk of developing fractures as adults.[92]

In infants and young children, cow's milk is not recommended as a main milk feed during the first year of life, due to its insufficient iron content and associated risk of intestinal bleeding.[49,57] It is therefore recommended that other sources of dairy be given to children under the age of one year, such as cheese, yoghurt, dried milk products or small amounts of cow's milk added to other foods.[49,57]

With regard to infants and children following a vegetarian diet, milk and other dairy products should be provided in adequate quantities to ensure that they receive the necessary nutrients. Vegan diets are to be avoided in children.[57]

1.8 Conclusion and motivation for the study

Appropriate nutritional intake is vital to promote optimal growth and development amongst infants and young children. Consequences of poor infant feeding practices include undernutrition, overweight and obesity, as well as multiple micronutrient deficiencies, which are all common nutritional problems in South Africa. The need for a set of South African PFBDGs is clear, as such guidelines can be used to address these issues by educating South Africans on adequate feeding practices for children.

Before the PFBDGs are adopted and utilised by the DoH, the guidelines must be tested for adequacy and comprehension.[39] Specific groups, particularly mothers and

caregivers of infants and children, should be targeted to assess whether the guidelines are interpreted in the correct way, and whether they are acceptable to various cultures.[39]

Stellenbosch University developed a protocol to test all the PFBDGs for the age group 0–5 years. The protocol divided the PFBDGs into three sections, namely 0–12 months, 12–36 months and 3–5 years. Testing on the first section (0–6 months and 6–12 months) was undertaken by a group of undergraduate dietetic students during 2013/2014 as part of their Research Methodology module in the third and fourth years of study. This study will report on the testing of the guidelines in the second section (12–36 months). As discussed in the protocol, the third section (3–5 years) will be offered as a research topic to eligible undergraduate/postgraduate students in the near future.

The intention is for the results of this study to be presented to the National PFBDG working group to be included in their discussions as to whether the guidelines need revision to ensure understanding or can be implemented by the Department of Health and used as an educational fool for improving IYCF and health in South Africa.

Chapter 2

Methodology

2.1 Aim of the study

The aim of this study was to determine the appropriateness and understanding of the revised PFBDGs among mothers/caregivers of children aged 12–36 months in the Stellenbosch Municipality in the Western Cape province, South Africa.

2.2 Objectives of the study

The objectives of the study were to:

- assess the appropriateness of the PFBDGs in terms of mothers'/caregivers' understanding and interpretation thereof;
- assess the relationship between the understanding and interpretation of the PFBDGs, and the socio-economic status, culture, home language and type of settlement, of the mothers /caregivers;
- determine previous exposure to similar guidelines; and
- determine the barriers to and enablers of the implementation of the guidelines.

2.3 Study design

A descriptive cross-sectional qualitative study was conducted. The use of a qualitative approach allowed the investigator to extract in-depth information from individuals to gain a better understanding of their attitudes, beliefs and opinions regarding the PFBDGs. Focus-group discussions (FGD) were the method of data collection, as recommended by the FAO.[3]

2.4 Selection of the study site

The Western Cape province can be divided into 6 districts – the City of Cape Town, Cape Winelands, West Coast, Central Karoo, Overberg, and Eden. The Cape Winelands district can be further divided into five sub-districts, namely Witzenberg, Drakenstein, Stellenbosch, Breede Valley and Langeberg. One of these sub-districts, the Stellenbosch Municipality, was chosen purposively, and decided upon as the study site, owing to its well-established and diverse community. Furthermore, Stellenbosch University's main campus is situated within the town of Stellenbosch and the university has a recognised civic engagement relationship with the surrounding communities. The municipality also includes the towns of Pniel and Franschhoek.

2.5 Study population

The study population consisted of mothers/caregivers responsible for children between the ages of 12–36 months, residing in the Stellenbosch Municipality during the period of September to November 2015. Mothers/caregivers refer to all women over the age of 18, who have taken care of a child aged 12–36 months, including grandmothers and crèche teachers. Women were chosen as the study population as they are the primary carers of children in this age group and make decisions regarding IYCF. They may receive support from partners/men, but they are the group who require empowerment to make the right decisions with regard to infant feeding.

The demographics of the Stellenbosch Municipality can be seen in Table 2.1.

2.5.1 Inclusion and exclusion criteria

Mothers/caregivers were considered for inclusion in the study if they had children of their own or were looking after children between the ages of 12–36 months. They were required to reside in the Stellenbosch Municipality and be comfortable speaking English, Afrikaans or Xhosa.

Mothers/caregivers were excluded from the study if they were under the age of 18 years or if they were not permanent residents of the chosen study site. Being formally trained in nutrition, as well as failure to provide informed consent, also excluded mothers/caregivers from participating in the study.

Table 2.1: Stellenbosch Municipality population demographics according to Census 2011[93]

Demographic	Stellenbosch Municipality
Total population	155 733 people
Population growth rate (2001–2011)	2.71%
Population groups	Coloured: 52.2% Black African: 28.1% White: 18.5%
Languages	Afrikaans: 63.8% IsiXhosa: 19.6% English: 6.8%
Unemployment rate	15.2%
Youth unemployment rate	21.5%
No schooling aged 20+	3.1%
Matric aged 20+	25.2%
Higher education aged 20+	17.3%
Settlement type	Urban: 76.6% Rural: 23.4%
Number of households	43 420
Average household size	3.3
Female-headed households	34.6%
Electricity	For lighting: 92.9% For cooking: 87.5%

2.6 Sampling strategy

2.6.1 Sample size

Formal random sampling is the sampling technique used most often to determine sample size; however this technique is not suitable when conducting qualitative research.[94] The most appropriate sampling technique when planning a qualitative study is purposive sampling. This technique involves intentionally selecting participants based on certain characteristics.[94] Non-random purposive sampling was thus the technique used in this study, to ensure that the FGDs consisted of mothers/caregivers of children

between the ages of 12 and 36 months.

A successful method of determining sample size is often to continue with data collection until very little or no new information is obtained or until enough information has been gathered to answer the research question.[94] The former, which refers to the principle of data saturation, was used in this study.

The PFBDGs need to be appropriate for use by all South Africans, therefore the testing of the guidelines needed to take place in areas representative of the South African society. Because the selected study site is classified as a peri-urban region, stratified sampling took place according to the type of settlement, namely formal or informal. Formal settlement types are regarded as areas with individuals of a medium to high socio-economic status, while informal settlement types as those with a low socio-economic status. Areas for inclusion in the study were randomly selected. It was initially proposed that 6–9 formal settlements and 6–9 informal settlements would be included, whereby two to three groups would be conducted in each language, namely English, Afrikaans and Xhosa as first language, for each settlement type. During the sampling period, it was however identified that in the Stellenbosch Municipality there were no formal Xhosa areas as well as very few individuals living in informal areas with English as their first language. This led to a discrepancy between the proposed and actual sampling technique. Figure 2.1 is an illustration of the proposed and actual sampling technique used in the study.

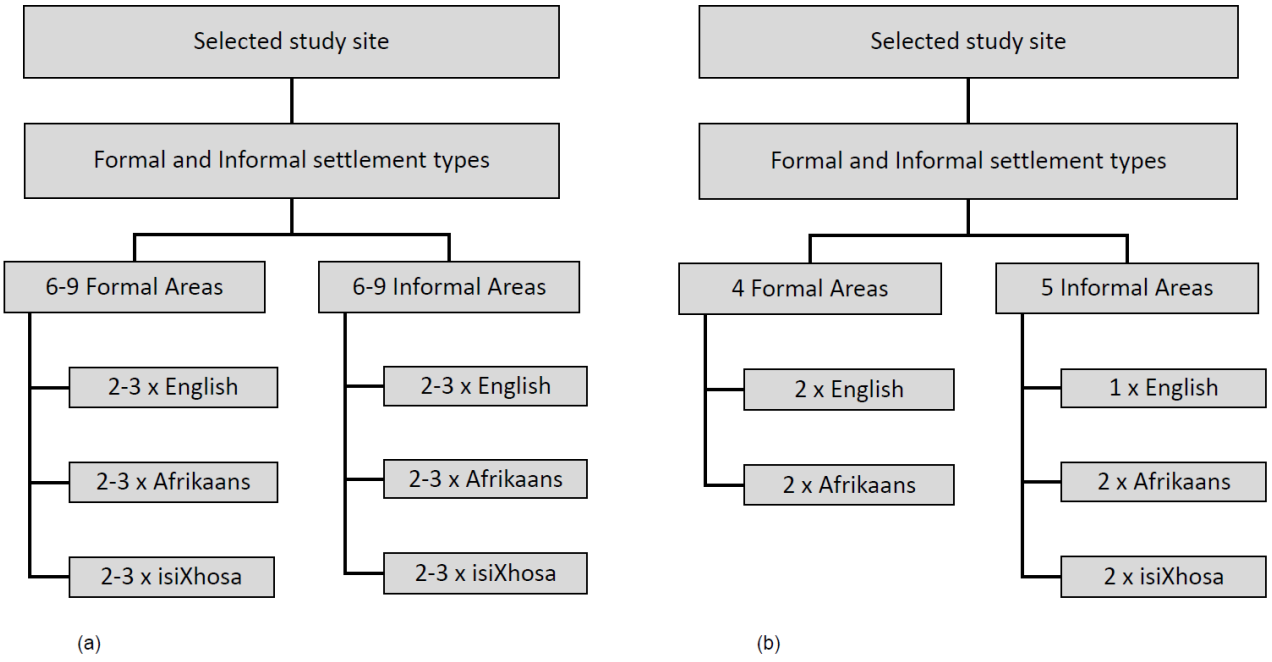


Figure 2.1: Sampling technique: (a) Proposed sampling (b) Actual sampling

A total of nine FGDs were conducted and ranged from 4–11 participants each. Four FGDs were held in formal areas, while five were held in informal areas. A total of 65 mothers/caregivers participated in the study, 20 in formal areas and 45 in informal areas.

2.6.2 Sample selection methods

Participants were recruited from local churches, support groups, crèches and other community-based organisations (CBOs). Once the areas for inclusion were randomly selected, a list of the crèches in those selected areas was obtained from the Western Cape Department of Social Development. Support groups and crèches were contacted via telephone and email and asked whether they were willing to assist with the recruitment of participants.

The recruitment of participants for the English and Afrikaans FGDs was done by the investigator. Mothers from a local breastfeeding support group were contacted via email, explaining the purpose of the study. Créches and churches were also asked to assist by handing out flyers to parents and by encouraging mothers to participate. These flyers provided a brief summary of the study, as well as the date and time of the FGD. They were only given to mothers/caregivers who met the inclusion criteria. Recruitment of two FGDs took place at household and community level with the help of fieldworkers working at a local non-governmental organisation (NGO). The fieldworkers were trained and provided with the inclusion and exclusion criteria to select appropriate participants. The training of fieldworkers is discussed in Section 2.7.3. The fieldworkers were also required to follow recruitment forms, both for household (Addendum A) and community (Addendum B) visits, when conversing with potential participants. When possible, all potential participants were contacted via telephone or email prior to the discussion, to promote attendance.

2.7 Methods of data collection

2.7.1 Socio-demographic questionnaires

Before the commencement of the FGDs, all the participants were requested to complete a socio-demographic questionnaire (Addendum C). Data was collected on the participant's date of birth, ethnicity, home language, highest level of education, employment status and relation to the child being cared for. The FGD facilitator guided the participants through the questionnaire by reading all the questions aloud and ensuring the questionnaires were thoroughly completed.

2.7.2 Focus-group discussions

The method of data collection in the study was FGDs. FGDs are group discussions aimed at identifying the opinions, beliefs and attitudes of participants from similar backgrounds regarding a specific topic. An important aspect of FGDs is homogeneity, meaning that the participants should be divided into groups based on a shared characteristic. This ensures that participants share a common trait, such as gender, age, education or language, and are more likely to discuss the topic freely without judgement from fellow participants.[95] The FGDs in this study were divided according to settlement type and home language, which ensured a comfortable environment for all participants.

The duration for the majority of the FGDs ranged from 60–90 minutes, with only one FGD lasting two hours. Due to time constraints, only half of the PFBDGs were discussed in detail in this FGD. The discussions were held at convenient venues in the area. Two of the discussions were held at the investigator's home and two were held at participants' homes. Churches, crèches and the premises of CBOs were used for the other five FGDs. Facilities were contacted or visited in advance to arrange suitable dates and times for the FGDs. The venues were set up on the day of the discussion and refreshments, such as tea, coffee and biscuits were also provided.

The investigator conducted the English and Afrikaans FGDs, while two fieldworkers were recruited and trained to facilitate the two Xhosa FGDs. The investigator acted as an observer during the Xhosa FDGs. All the FGDs were audio recorded to enable thorough analysis. Audio recordings also provide an accurate account of the discussions and allow for complete transcriptions.[95]

The topic of discussion, the proposed revised PFBDGs, was translated into Afrikaans and Xhosa (Addendum D) prior to the data collection period by a private translation company. The PFBDGs were also printed and used as flash cards during the FGDs. They were also enlarged onto A1-size posters and displayed at every FGD (Addendum E). In the introduction to the sessions, the facilitators welcomed the participants and explained the main aim and expectations of the study. An FGD schedule (Addendum F), which was adapted from one used in a similar study,[96] was used by the facilitators during all discussions. This discussion schedule included the procedure that was to be followed, as well as the questions that were to be asked by the facilitators pertaining to the PFBDGs. Due to the nature of the study and the need to investigate ten PFBDGs, the structure of the discussion schedule was followed and all questions were asked in the order in which they appeared in the schedule. Participants were required to discuss each point in depth after it had been read aloud by the facilitator.

The following aspects were addressed in the FGD discussion schedule:

- The mother's/caregiver's understanding and interpretation of each PFBDG.
- Previous exposure to the PFBDGs.
- Barriers to the implementation of the PFBDGs.
- Enablers of the implementation of the PFBDGs.

2.7.3 Training of fieldworkers

Fieldworkers were recruited by the investigator to assist with the Xhosa FGDs, as well as with the recruitment of participants in some areas. Two facilitators were recruited to facilitate the Xhosa FGDs. One of these facilitators was recruited from a local NGO and was asked to facilitate the one Xhosa FGD, as she was familiar with the area and knew the participants. Another member of the NGO, who assisted the facilitator with recruitment of participants for the FGDs, was also present at this FGD, as an observer. A second facilitator was recruited to facilitate the other Xhosa FGD. She was recruited as a result of her experience with FGDs. An observer was also present.

Training was conducted by the investigator. The two fieldworkers who assisted with the first Xhosa FGD were trained on the recruitment process a week before the FGD was conducted. The session included a brief overview of the study's aim and objectives, as well as the inclusion and exclusion criteria. They were also required to be familiar with the recruitment form to be used in the field to recruit participants. The recruitment forms were adapted from those used in a similar study.[96] The fieldworkers were then trained on the process of focus groups, as well as the FGD schedule. They were also required to be familiar with the study's aims and objectives. The two fieldworkers who assisted with the second Xhosa FGD were trained on the day of the FGD. They were very familiar with the process as they had experience in facilitating FGDs, due to previous research work for Stellenbosch University.

Observers were not used in the English and Afrikaans FGDs. The investigator took note of the body language and facial expressions of the participants, while facilitating a group. The observers present in the Xhosa FGDs were asked to identify individuals who were not participating and they were also required to hold up the flash cards displaying each PFBDG.

The investigator attended a Qualitative Research Methods for Health Sciences short course which was held from July to November 2015. This gave the investigator insight into qualitative research methods, as well as providing practical training in conducting qualitative interviews, transcriptions, data analysis and writing a qualitative report.

2.8 Analysis of data

Contextualised interpretive content analysis was the method used to analyse the data in this study. This process is described as inspecting the data for common themes which are then grouped together into codes.[94]

The transcription process was the first phase of data analysis. All audio recordings from the FGDs were professionally transcribed, word for word, directly into English. To ensure accuracy, these transcripts were then checked and reviewed by the investigator for quality control purposes. In the case of the two Xhosa FGDs, the investigator enlisted a fieldworker to assist with the revision of the transcripts. The reviewed transcripts were then reread to ensure the investigator was familiar with the data. Each transcript was then coded manually by the investigator to generate a set of themes. Themes were colour coded and grouped together under major themes. They were then organised according to broader clusters, which were based on the predetermined study aims and objectives. Once the data from each transcript was coded and organised, the investigator began to summarise the themes across all FGDs to gain insight into the overall findings of the study. The data analysis process was done manually by the investigator on a Microsoft Excel spreadsheet, which can be seen in Addendum G.

Due to the immense amount of data gathered, findings had to be prioritised according to their importance in the study. The investigator ensured inclusion of the themes discussed most often, while responses not extensively discussed by the participants were not included, unless a direct link to the study aims and objectives was clear.

Descriptive statistics were used for the data collected from the socio-demographic questionnaires and recorded and analysed by the investigator in Microsoft Excel 2013. The use of a statistician was not required in the data analysis process due to the study's qualitative nature.

2.9 Ethical and legal aspects

2.9.1 Ethical review committee

Ethical approval was sought from the Human Research Ethics Committee, Faculty of Medicine and Health Sciences, Stellenbosch University [HREC (SU)] for an umbrella study, titled: Field testing of the revised Paediatric Food-Based Dietary Guidelines among mothers/caregivers of children aged 0–5 years old in the Western Cape province, South Africa. Approval was obtained in February 2015 (protocol number: N14/09/122). No further approval was necessary for this study as it formed part of the umbrella study.

2.9.2 Informed consent

All mothers/caregivers, who were invited to participate in the study, were required to provide written informed consent (Addendum H). Prior to the FGD, the facilitator explained the nature of the study to the participants, as well as the purpose of the audio recording. This was done in the preferred language of the group, either English, Afrikaans or Xhosa. Participants were given the opportunity to ask questions, and only once any possible misunderstandings were satisfactorily addressed, were the consent forms signed. Separate consent was requested for the audio recording of the FGDs. Participants were not forced to participate in the study and were informed that their consent could be withdrawn at any time during the duration of the FGD. No participants refused to provide informed consent.

2.9.3 Confidentiality and privacy

Confidentiality and privacy were ensured throughout the study. Participants were informed that all information would be treated with confidentiality, through the use of unique classification codes. During the FGDs, participants were required to wear a number on their shirts for identification purposes, therefore no names were used during the discussions. If a participant used a name during the discussion, the name was deleted from the transcription. All FGDs were held in private areas behind closed doors, to ensure minimal disturbances. Participants were assured that the audio recordings would be handled in a confidential manner and would be stored under unidentifiable codes on the investigator's private computer.

2.9.4 Incentives

Refreshments, such as tea, coffee and biscuits, were served at all FGDs. The participants also received a pen and parcel consisting of dried fruit and nuts, as a token of appreciation for participating in the study.

2.10 Pilot study

A pilot study was conducted in March 2015 in Paarl, prior to the main data-collection period. One FGD consisting of five English-speaking participants was held. The participants selected to take part in the pilot study were representative of the study sample. Three of the participants were mothers of children within the specific age group, while two were grandmothers.

The investigator transcribed the audio recording of the pilot study in order to gain insight into the process. The pilot study allowed the investigator to test the discussion schedule. Knowledge thus gained was used to make small adjustments to the schedule.

Chapter 3

Results

3.1 Study population: Socio-demographic data

During the ten week data-collection period, nine FGDs were conducted within the Stellenbosch Municipality. A total of 65 mothers/caregivers took part in the study. A breakdown of the FGDs and socio-demographic information can be seen in Table 3.1.

Table 3.1: Socio-demographic profile of participants in focus-group discussions

No.	Area	Formal / Informal	No. of participants	Age range	Ethnicity	Language
1	Welgevonden	F	6	27–37	W	A
2	Idasvalley	I	5	26–50	C	A
3	Die Boord	F	4	30–39	W	E
4	Onder Papegaaiberg	F	5	24–41	W	A
5	Jamestown	I	8	30–68	C	A
6	Kayamandi	I	10	27–60	B	X
7	Kayamandi	I	11	22–52	B	E
8	Paradyskloof	F	5	21–46	W	E
9	Franschhoek	I	11	20–63	B	X

F = Formal, I = Informal, W = White, B = Black, C= Coloured, E = English, A = Afrikaans, X = Xhosa

3.1.1 Age of participants

The age of the participants in the FGDs ranged from 20–68 years, with a mean age of 37 years. Four participants did not feel comfortable revealing their age.

3.1.2 Settlement type

Of the nine FGDs, four were conducted in formal areas, with a range of 4–6 participants per FGD. Five FGDs were conducted in informal areas and consisted of between 5–11 participants per FGD. A total of 20 individuals participated in the FGDs in formal areas and 45 participated in the FGDs in the informal areas.

3.1.3 Ethnicity

Participants were asked to document their ethnicity. Almost half (n=32) of the participants were black while 20 were white and 13 were coloured.

3.1.4 Language

In this study, the languages of interest were English, Afrikaans and Xhosa. Of the nine FGDs, three were conducted in English, four were conducted in Afrikaans and two were conducted in Xhosa. When asked to document their home language, three participants listed English and 30 listed Afrikaans, while 32 listed Xhosa. Initially, all the FGDs were planned to be in the home language of the participants. This was however not always possible, as English is not a language spoken in a significant number of Stellenbosch households. In order to test the PFBDGs in English too, participants with a home language of Xhosa or Afrikaans were asked to participate in English FGDs, if they were comfortable to do so.

3.1.5 Level of education

The level of education varied significantly among the groups. Of the 65 participants, 37% (n=24) had a tertiary education, while from the remaining 41, only 29% (n=12) listed Matric as their highest level of education.

3.1.6 Employment status

Forty-two of the participants were employed, while 23 were unemployed. Of the 42 employed participants, 40% worked at crèches.

3.1.7 Relationship to the child

Participants were requested to document their relationship with a child between the ages of 12 and 36 months. Half (n=33) of the participants reported that they were the mother of the child, while almost a third (n=21) indicated that they were caregivers of children within the age category, with most of them working at crèches.

In the sections to follow, six predominant clusters are discussed, as derived from the main set of themes. These include i) the appropriateness of the PFBDGs, ii) understanding and interpretation of the PFBDGs, iii) previous exposure to the PFBDG messages, iv) participants' proposed suggestions for the rephrasing of the PFBDGs, v) possible barriers to the implementation of the PFBDGs, and vi) possible enablers of the implementation of the PFBDGs.

3.2 Appropriateness of the Paediatric Food-Based Dietary Guidelines

The appropriateness of the PFBDGs was discussed to gain a better understanding of the participants' overall attitudes towards the guidelines and to ascertain whether they found them to be important. Participants agreed that the proposed PFBDGs were appropriate, as they were important for a child's health, growth and development. One participant explained how children should be exposed to different foods from a young age to expand their palates. The guidelines were also described as being appropriate as they target a critical age group for the development of healthy habits:

> *"... it's an important age as well, because by that time, if you haven't developed those eating habits yet, then it becomes very difficult to do so at a later stage."* (FGD no. 4, Participant 2, to Samuels)

3.3 Understanding and interpretation of the Paediatric Food-Based Dietary Guidelines

In order to determine the participants' understanding and interpretation of the PFBDGs, each guideline was discussed and summarised separately.

3.3.1 Guideline 1: "Continue to breastfeed to two years and beyond"

This PFBDG was discussed extensively in each group. Common themes that emerged from the discussions include the benefits associated with breastfeeding, challenges associated with breastfeeding, attitudes and perceptions regarding continued breastfeeding, breastfeeding in the workplace, breastfeeding in public, breastfeeding support, and the interpretation of the term "beyond".

3.3.1.1 Benefits associated with breastfeeding

Participants agreed that breastfeeding was important and linked to a number of health benefits. Many participants stated that breast milk was the best nutrition for a child. It was also discussed that breastfeeding resulted in stronger bones and teeth, as well as improved brain development. Breastfeeding mothers also explained that their children had strong immune systems and did not fall ill easily and that breast milk thus played an integral part in a child's immunity:

> *"I think the nutritional value of breast milk is high so it is beneficial to the baby's growth and health, and it has the antibodies as well, so it also supports the immune system. So in that regard it is better than formula."* (FGD no. 3, Participant 2, to Samuels)

The importance of breastfeeding was also extended to the mother. A participant explained that breastfeeding was beneficial to both the baby and the mother in that it protected the mother from cancer. It was also agreed that breastfeeding assisted with bonding and facilitated a connection between the mother and baby.

When discussing the importance of breastfeeding, one participant stated that breast milk could be used for multiple things, including eye infections, and when referring to breast milk stated:

> *". . . there is a reason they call it white gold."* (FGD no. 3, Participant 4, to Samuels)

The financial benefit of breastfeeding was also highlighted, as some participants explained that formula milk was expensive and thus breastfeeding could be beneficial, specifically for those from a lower socio-economic status:

> *"...for someone who is not financially well off, and we have many of them in our Western society, it should be strongly recommended to them to continue breastfeeding for as long as possible. It costs them nothing, and for them to continue with the necessary nutrition through formula milk, one doesn't know if they can afford that."* (FGD no. 1, Participant 2, to Samuels)

When discussing the benefits of breastfeeding associated with a child's health, some participants found it important to explain that their children were still healthy and well developed despite the fact that they were not breastfed at all, or were only breastfed for a short period. One participant stated that her children were healthy and strong, even though she was only able to breastfeed for two months, while another explained:

> *"My baby wasn't breastfed, and she developed like a normal child, and she has healthy teeth, and she drank a bottle and I never had a problem ..."* (FGD no. 2, Participant 1, to Samuels)

An issue arising from the discussion around the benefits of breastfeeding came to light in one FGD. Participants explained that despite the numerous advantages of breastfeeding, disadvantages also existed. They stated that drugs and alcohol were major problems in their community and that they found it difficult to promote breastfeeding knowing that children could be exposed to these substances through breast milk:

> *"...they are on drugs and things, then those babies get all those things in. Now how can a person say breastfeeding is good, and breastfeeding is natural, understand?"* (FGD no. 5, Participant 6, to Samuels)

3.3.1.2 Challenges associated with breastfeeding

The discussion around the first PFBDG revealed many barriers and challenges that mothers face with regard to breastfeeding. Participants described many reasons for not breastfeeding at all or only breastfeeding for a short period of time. A recurring reason included having to return to work, which made breastfeeding difficult and impractical. Attitudes and concerns regarding breastfeeding in the workplace are discussed further in Section 3.3.1.4.

Not having enough milk was a common perceived challenge breastfeeding mothers faced. Some mothers explained that their breasts were “empty” and they were therefore forced to stop breastfeeding, or they found it difficult to maintain their milk production owing to stress.

Some participants experienced breast - or nipple problems and therefore stopped breastfeeding early or chose not to breastfeed at all. One participant explained that the size of her breasts made breastfeeding difficult and very uncomfortable, while another complained of inverted nipples and was afraid to breastfeed. The pain of breastfeeding was also a common concern:

> *“I was scared, because they hurt your nipples when they drink. My sister’s child hurt her . . . ”* (FGD no. 2, Participant 4, to Samuels)

Substance abuse was also discussed as a factor resulting in the cessation of breastfeeding:

> *“. . . although some people will not follow it because of the drinks they use, like the drugs a person uses and decides to stop breastfeeding, because she wants to be going on the streets . . . ”* (FGD no. 9, Participant 2, to Nqakala)

One participant described how some paediatricians and nurses often served as a barrier to breastfeeding. She explained that in her experience, formula milk was prescribed too quickly and if she hadn’t been determined to breastfeed, she would have taken the doctor’s advice. Another participant explained that the information she had received from her paediatrician about breastfeeding differed from the information she received from a breastfeeding clinic advocating extended breastfeeding:

> *“After I’d been breastfeeding for about 8, 9 months, she said, ‘It’s not really necessary, it’s more for soothing. It doesn’t really have any nutritional benefits.’”* (FGD no. 4, Participant 4, to Samuels)

Other challenges discussed by participants included falling pregnant with another child, which can result in early cessation of breastfeeding, as well as a lack of breastfeeding information for first-time mothers.

3.3.1.3 Attitudes and perceptions regarding continued breastfeeding

Continued breastfeeding or breastfeeding to two years and beyond was described by many participants as being unachievable and impractical. Due to continued breastfeeding being socially frowned upon and unacceptable, mothers stated that children being able to lift their shirt or ask for a feed in public often resulted in them feeling embarrassed. Participants also explained that they stopped breastfeeding at an early stage to avoid being judged:

> *"I would have continued breastfeeding if it was socially acceptable, but it is unacceptable for a child to be able to open up his mother's shirt and start drinking."* (FGD no. 1, Participant 5, to Samuels)

External pressure from friends and families also caused mothers to stop breastfeeding early. One participant described how she felt immense pressure from family members, as they often questioned why she was still breastfeeding her nine-month-old baby. She explained how she eventually succumbed to the pressure, as it was too difficult to continue. Conflicting opinions regarding pressure to stop breastfeeding were discussed in one FGD. It was reported by one participant that often mothers felt a lot of pressure to breastfeed and if they were unable to do so for an extended period of time for any reason, they were shunned by society. Another participant explained that there should not be any pressure on mothers to breastfeed for a specific period of time:

> *". . . people feel like a failure if they can't breastfeed or if they breastfeed for only a few months. Sometimes they feel like an . . . outsider . . . "* (FGD no. 8, Participant 5, to Samuels)

Other attitudes and perceptions regarding continued breastfeeding include that some participants find it to be "too extreme". It was expressed that continued breastfeeding could result in children becoming too dependent on their mothers. One participant stated:

> *". . . he's going to start being alienated and talked about."* (FGD no. 8, Participant 4, to Samuels)

The misconception that continued breastfeeding could be detrimental to a child's development was also discussed. Participants from an informal area explained that breastfeeding a child for too long could result in children developing speech problems and not learning to chew and swallow properly.

3.3.1.4 Breastfeeding in the workplace

Participants reported that the workplace could act either as a facilitator or as a barrier to breastfeeding. Some participants explained that their workplace was supportive in that they were provided with a private room and time to express, while others found it rather difficult, as their environments were often not accommodating. Mothers reported that expressing at work was not easy as facilities were not always provided and thus they were often forced to express in the bathroom. Expressing at work was also frowned upon and thus mothers found that they had to hide it:

> *"... every time someone came in I used to flush the toilet all the time so they couldn't hear the pump noise, which was ridiculous."* (FGD no. 3, Participant 4, to Samuels)

The time lost by expressing was also a common concern. One participant explained that her hours have to be logged on a time sheet at work and she would therefore have to try to catch up and make up for lost time, if she were to express at work. Another participant stated:

> *"... the quicker you stop, the better for them* [management]*, kind of thing, because it takes time away from work."* (FGD no. 8, Participant 1, to Samuels)

3.3.1.5 Breastfeeding in public

Breastfeeding in public was another issue that received much attention during group discussions. Participants reported a stigma attached to breastfeeding in public, which could result in many stares. One participant explained that breastfeeding in public was not well received and was often difficult:

> *"... there's a general expectation that people expect you to hide away in the toilets when you breastfeed your child, and not to sit there in front of everyone."* (FGD no. 4, Participant 3, to Samuels)

She continued to state that it was uncomfortable at times, especially in summer, as she felt the need to drape a cloth over herself while breastfeeding.

Breastfeeding in public as a cultural issue was also discussed. Some participants noted that breastfeeding in public was more acceptable in certain cultures than in others. Some Caucasian participants explained that mixed ancestry or African cultures were more open to and accepting of breastfeeding in public compared with more Western

cultures. This was confirmed by an African participant from an informal area, as she explained that breastfeeding was easy regardless of where you were:

> *"I don't see any problem when you are breastfeeding, you are breastfeeding your baby because s/he needs it, even if you are on a taxi, you just take out your breast and feed your baby."* (FGD no. 9, Participant 2, to Nqakala)

Some participants expressed differing opinions regarding breastfeeding in public. It was stated by one participant that it was not appropriate to breastfeed in public and if need be, mothers should cover up. Another participant explained that breastfeeding should be private and should not be practised in public:

> *"There's a time and place for everything."* (FGD no. 8, Participant 4, to Samuels)

3.3.1.6 Breastfeeding support

A recurring subject that surfaced from the breastfeeding discussions included the importance of breastfeeding support. Many participants stressed that a support system during breastfeeding was critical for a positive breastfeeding experience and that a lack of support from husbands/partners, family and friends made breastfeeding challenging, especially during difficult times:

> *"And many times when you're struggling with something, your child has colic or he struggles to fall asleep, sometime or other any child goes through a problem phase, then other people are very quick to come and say, 'But why are you still struggling with that? Just give the child a bottle.' And that's the last thing that you want to hear at that stage. You just want someone to say, 'Hang in there, in a week or two it will be better.'"* (FGD no. 4, Participant 2, to Samuels)

Public awareness and knowledge regarding breastfeeding was also noted to be poor among society and communities. Participants explained that often the general public, as well as their own family members, were not adequately informed about breastfeeding, which resulted in mothers having to breastfeed in a private room during family gatherings.

3.3.1.7 Interpretation of the term “beyond”

Participants were asked to discuss their interpretation and understanding of the term “beyond”. Explanations from them included:

- For as long as possible.
- Until you can’t any more.
- Breastfeed as much as you can.
- More than two years.
- Breastfeed up to three years.
- Until the child is ready to eat other food besides breast milk.

It was also reported by some participants that “beyond” did not refer to a specific age and that it is the child or parent’s choice when to stop breastfeeding.

3.3.2 Guideline 2: “Gradually increase the amount of food, number of feedings and variety as your child gets older”

This PFBDG was discussed in much detail during the FGDs. Complementary feeding, the interpretation of the term “variety”, as well as the general importance of the guideline emerged as common themes.

3.3.2.1 Complementary feeding

With regard to the introduction of complementary foods, one participant stated that solids could be introduced to a baby when they are between four and six months of age, while another participant explained that the correct time to introduce complementary foods differed for every child and depended on their milestones. Some participants from formal areas explained that the guidelines on the introduction of solids had recently changed, with some stating they had changed from four to six months, while another remembered a change from six to four months. The general opinion however, among participants from all areas, regarding the correct age to introduce solids to a baby, was six months.

3.3.2.2 Interpretation of the term "variety"

Participants were asked to describe their understanding of the term "variety". The following descriptions were provided:

- Different types of food.
- A combination.
- Something from each food group.
- A bit of everything.
- Vegetables, fruit, meat, chicken, pasta, starches.

However, the term was not fully understood by all participants of one FGD in an informal area. These participants stated that they did not know what the term meant.

3.3.2.3 Importance of gradually increasing the amount of food, number of feedings and variety

Participants noted that the process of increasing the amount of food and number of feedings was essential as children become older. Various participants stated that owing to an increase in activity levels during this life stage, children's needs changed and their energy requirements increased. It was also explained that food intake therefore had to increase to meet these requirements and to support optimal growth. However, it was noted by some participants that before the age of one, babys' milk feeds met the bulk of their requirements and food therefore only became important thereafter:

> *"...before one, food is just for fun."* (FGD no. 8, Participant 1, to Samuels)

Providing children with a variety of food was found to be important, to meet their nutritional requirements, to provide adequate amounts of nutrients and to ensure a balanced diet. Participants also explained that giving a variety of food prevented children from getting bored with receiving the same food too often and also prevented them from becoming "fussy eaters". It was also mentioned by a participant that one food type was not sufficient to sustain a child and thus children required a variety of foods.

Many participants reported that the guideline was logical and easy to implement. One participant from a formal area explained that she found the second guideline to be obvious, because children needed to eat more as they got older. She continued to state that although she found it obvious, she still thought that the guideline was important for members of poor communities:

> *"I also think maybe in communities where children just get pap for instance, it is important that women realise that they should also introduce other foods while the children are still young and that one thing alone isn't enough to sustain them as they get older. So although that guideline seems obvious to me, I can imagine situations where it might not be obvious and where it might be important to include it."* (FGD no. 3, Participant 2, to Samuels)

Participants also discussed that the process of increasing the amount of food depended largely on the child. It was explained that children often let their parents know through their actions that they wanted more food and it was thus child dependent. A participant working at a crèche explained:

> *"You start with one big spoon of food. Sometimes they finish it, sometimes they don't. And the day you see they finished it, then you start feeding the next baby and he comes standing by you and he's opening his mouth and you know that wasn't enough, he wants more."* (FGD no. 8, Participant 2, to Samuels)

3.3.3 Guideline 3: "Give your child meat, chicken, fish or egg every day, or as often as possible"

Meat, chicken, fish and egg were interpreted by participants as sources of protein, as well as of iron. Protein was described by participants as being important for overall health, growth, development, and for building muscles and strong bodies. Iron was mentioned by participants as playing a role in brain development, while participants of a FGD in an informal area stated fish as being an important source of protein, calcium, vitamins and Omega 3.

A concern raised among most participants when discussing this guideline was that many sources of protein were omitted from the list. Participants from both formal and informal areas felt that the guideline was limiting in that it did not include options for vegetarians, as well as not including options for people of a lower socio-economic status unable to afford meat, chicken, fish or eggs:

> *"But proteins can be much more than that. It can be your legumes, quinoa. There are different kinds of proteins that are more accessible to different culture groups, rather than those types."* (FGD no. 1, Participant 2, to Samuels)

A discussion among participants in a FGD in a formal area, which centred around vegetable sources of protein, resulted in differing opinions. Some participants expressed

the concern that animal sources of protein contained components such as amino acids not present in vegetable sources. They added that supplementation of these components was important for people following a vegetarian diet. Another participant's opinion was that protein did not have to come solely from animal products and that the guideline was thus excluding members of the public that did not eat meat, chicken, fish or egg.

With regard to the interpretation of the guideline, most participants' understanding was that it suggests to the mother to provide one of the sources of protein listed in the guideline daily, however, some participants from informal areas were unsure:

> *". . . what I don't understand is, does she have to eat all of these things in one day, the three of them?"* (FGD no. 9, Participant 3, to Nqakala)

The discussions thus highlighted that the general public could misinterpret the guideline and think that they had to provide all of the sources of protein listed, every day.

3.3.4 Guideline 4: "Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day"

When discussing the fourth PFBDG, a common theme that emerged was the importance of fruit and vegetables. Participants reported that in general, fruit and vegetables were important sources of vitamins and minerals, and were healthy food choices that assisted with growth and development in children. When assessing the importance of dark-green leafy and orange-coloured vegetables specifically, participants explained that different coloured vegetables contained different nutrients and it was necessary to eat from both groups:

> *"I know different coloured vegetables have different nutritional values or nutrients and that sort of thing, so it is good to get them all in."* (FGD no. 1, Participant 4, to Samuels)

Participants from formal areas explained that dark-green leafy vegetables were good sources of iron and also contained antioxidants and calcium. It was also noted by one participant that dark-green leafy vegetables had a protective effect against cancer. Participants from formal areas also mentioned that orange-coloured vegetables contain beta-carotene and Vitamin A. Among participants from informal areas, the specific importance of each vegetable was unknown.

Participants were asked to provide examples of dark-green leafy vegetables, as well as orange-coloured vegetables, to assess their understanding of these terms. Dark-green leafy vegetables were reported as being spinach, broccoli and cabbage. Kale, sprouts and green beans were listed additionally from participants in formal areas, while lettuce was mentioned only among participants in informal areas. Some participants in formal areas expressed doubt as to whether cucumber fell into the category or not. With regard to orange-coloured vegetables, participants from both areas listed carrots, butternut and pumpkin as examples. Additionally, formal areas mentioned sweet potatoes and bell peppers as well.

A concerning factor for many participants with regard to this guideline, was the fact that only green and orange-coloured vegetables were mentioned. Participants explained that all vegetables were important and they were thus unsure why other vegetables were excluded. One participant expressed:

> *"I guess it goes down to the point of, is it really necessary to eat those vegetables, forsaking all others? Or is it that those should be the vegetables that have preference . . . "* (FGD no. 3, Participant 3, to Samuels)

3.3.5 Guideline 5: "Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child"

Much discussion took place on the fifth PFBDG. Emerging themes included participants' attitudes and perceptions regarding tea consumption, coffee consumption, as well as the perceived effects of the intake of sugary drinks and high-sugar, high-fat salty snacks.

3.3.5.1 Attitudes and perceptions regarding tea consumption

A discussion around the avoidance of tea revealed some confusion. Participants agreed that "normal" tea (Ceylon) should be avoided, as it contained caffeine and resulted in a loss of appetite. It was also stated that Ceylon tea contained tannins, which were not good for children and that tea was unhealthy when in a bottle with added milk and sugar, especially when given to a child before falling asleep:

> *"Tea is unhealthy, because they tell you, 'You mustn't add milk or a lot of sugar.' But I give my child tea, and then he had to have teeth extracted. And he still drinks tea, and it is my fault, but I made him accustomed to tea . . . "* (FGD no. 2, Participant 2, to Samuels)

Confusion arose because although the avoidance of Ceylon tea was agreed on, participants from both formal and informal areas felt that rooibos[a] tea was in fact good for children and the intake thereof should not be discouraged:

> *"For me that's a bit confusing, because I don't see rooibos tea as being something unhealthy for a child. I can understand coffee and sugary drinks and the added sugar and added salt, that makes sense, but there is no reason for me to not give my child rooibos tea."* (FGD no. 3, Participant 4, to Samuels)

Participants agreed that rooibos tea was healthy and contained antioxidants. It was stated that rooibos tea could be used as a supplement for children, resulting in an improved appetite and it could also act as an alternative to cold drinks, making it a healthier option:

> *"You don't even need to add sugar to rooibos tea. Because it's almost like a herb, it's good for your body, for children, and old and young."* (FGD no. 5, Participant 4, to Samuels)

It was also noted by a number of participants that some versions of rooibos tea were marketed explicitly for children and available in a variety of flavours. Furthermore, participants reported that the adult and child versions of rooibos tea were different, specifically in terms of taste.

According to participants, the intake of rooibos tea among children was often recommended and encouraged by doctors and paediatricians:

> *"My paediatrician told me that I give him too much milk, I must switch over to tea now, but specifically rooibos tea."* (FGD no. 1, Participant 4, to Samuels)

Some participants did however express doubt regarding the intake of rooibos tea by children. Participants explained that rooibos tea hindered the absorption of iron in young children, although one participant expressed uncertainty as to which age the iron uptake was affected.

---

[a] Rooibos is an indigenous herbal plant endemic to the mountainous Cederberg region in the Western Cape province of South Africa.

3.3.5.2 Attitudes and perceptions regarding coffee consumption

All participants concurred on the avoidance of coffee by children because of its high caffeine content. Participants explained that caffeine was a drug and was associated with a number of negative effects. It was also stated that caffeine acted as a stimulant, which could keep children awake, inhibit growth and result in dehydration. One participant also noted:

> *"... it* [caffeine] *is considered bad for adults, then it must be worse for children I think."* (FGD no. 3, Participant 2, to Samuels)

3.3.5.3 Perceived effects of consumption of sugary drinks and high-sugar, high-fat salty snacks

All participants agreed on the benefit of not giving children sugary drinks and high-sugar, high-fat salty snacks. It was stated that these foods promoted unhealthy lifestyles, as they were considered "junk food".

Participants were asked to provide examples of sugary drinks and high-sugar, high-fat salty snacks. They reported that sugary drinks included fruit juice, carbonated drinks, cordials and soft drinks. Additionally, participants from formal areas included ice-tea and hot sugary beverages such as Milo, hot chocolate and Horlicks, while participants from informal areas included sweetened tea and coffee.

With regard to high-sugar snacks, examples provided included sweets, chocolates, cake and biscuits. Participants from formal areas also included muffins and dried fruit, while one FGD in an informal area included sweetened yoghurt. High-fat salty snacks were listed by all participants as chips.

The discussion around the importance of avoiding sugary drinks and snacks revealed that participants experienced that children became hyperactive when they consumed sugar. Participants also explained that sugar was unhealthy, especially because of the effect it could have on a child's teeth, resulting in tooth decay. Some participants also discussed a link between sugar intake and the development of diabetes. Furthermore, discussions in informal areas revealed the belief that a high intake of sugar could result in children getting worms.

The effect of high-fat salty snacks was discussed among participants as being bad for heart health and resulting in high blood pressure, raised cholesterol levels and obesity.

Participants also stated that the intake of sugary drinks and high-sugar, high-fat salty snacks resulted in children developing bad habits at a young age. It was also expressed that when children consumed these types of food and drinks, they could lose their appetite for other food and thus eat less:

> *"But the thing is, most of those things that are listed there, if children get it in large quantities or if it is easily accessible, then it usually replaces food. They will drink a lot of tea and juice and then eat less. So to me it's important that one limits it, because you can't replace food with liquids."* (FGD no. 4, Participant 2, to Samuels)

Despite these negative effects, participants reported that it was difficult to implement the guideline, owing to a lack of control while their children were at school. Some participants explained that the day-care centres or crèche's often promoted unhealthy habits and children were often given unhealthy foods without their parents' knowledge. Participants working at crèches also stated that even though they had rules at the facilities regarding when and what children could bring to school to eat, parents continued to send the wrong types of snacks. One mother confirmed this as she explained that by sending various snacks with her child to school, she was able to send a message to other mothers regarding her status and ability to buy them:

> *"Yes, but most of the time it's the parents. I can put in a lot of things for my child, because I want the people to see, I can afford it . . . "* (FGD no. 2, Participant 4, to Samuels)

Another participant from a formal area did however state that the school her child attended was successful in controlling snacks:

> *"We are lucky because the school my son goes to, they actually specify in the rules, that the children aren't allowed to bring any cold drink or any sweets of any kind or chips or any unhealthy snack, so it makes it a bit easier I think. It is more like a competition, who sends the healthiest snack."* (FGD no. 3, Participant 4, to Samuels)

3.3.6 Guideline 6: "Hands should be washed with soap and clean water before preparing or eating food"

When discussing the sixth PFBDG, emerging themes included the importance of hand washing and the interpretation of the phrase "clean water".

3.3.6.1 The importance of hand washing

This was the topic most discussed when covering the sixth PFBDG. All participants explained that this guideline was important and that it focused on hygiene and specifically the avoidance of germs and prevention of disease. It was also stated that hygiene was important for babies, as they were often susceptible to the development of illnesses. In practice, some participants stated that hand washing and hygiene came naturally to them and were part of their daily routine, while others explained that although they understood the importance of the guideline, they did not always follow it. Reasons given for not always implementing the guideline included a lack of time and also a lack of facilities when in public. One participant also mentioned:

> *". . . that is a difficult one, I mean the child throws his food on the floor, and then he picks it up again and eats it. So I have rather a relaxed attitude towards that, so I don't take that too seriously. It's only really with the toilet routine that I wash my hands, and maybe when I start cooking, but I mean in between I'm on my phone or I touch my money or whatever . . . "* (FGD no. 1, Participant 4, to Samuels)

3.3.6.2 Interpretation of the phrase "clean water"

Participants reported their interpretation of the phrase "clean water":

- Water from a tap
- Running water
- Boiled water

3.3.7 Guideline 7: "Encourage your child to be active"

With regard to the seventh PFBDG, discussions took place around the importance of activity, as well as the interpretation and understanding of the term "active".

3.3.7.1 Importance of activity

Participants stated that activity was vital for a child's general health and for the development of fine and gross motor skills. It was also explained that activity played

a role in cognitive development, muscle development, and co-ordination, as well as in developing certain skills and self-confidence. One participant also mentioned that there was an inverse relationship between activity and obesity:

> *"I think the reason probably is because of the link with obesity, so that is why it is part of the nutritional guidelines, so to keep them active to avoid obesity."* (FGD no. 3, Participant 2, to Samuels)

It was also noted that activity provided children with the opportunity to interact socially with their friends and also allowed parents to bond with their children.

3.3.7.2 Interpretation of the term "active"

Participants were asked to describe their understanding of the term "active". Many participants explained that they interpreted the term as:

- Movement / moving their body
- Running
- Playing
- Jumping
- Not sitting in front of the television

It was also noted that participants felt that the term specifically referred to physical activity.

3.3.8 Guideline 8: "Feed your child five small meals during the day"

Much discussion took place on the interpretation of the eighth PFBDG. Common themes included the importance of regular meals and the understanding of the phrase "five small meals".

3.3.8.1 Importance of regular meals

The discussion around regular meals revealed that they were important for children as their stomach capacity was small and they were unable to consume large amounts of food at once. One participant also explained that regular meals provided children with energy to keep them going throughout the day, while another participant stated that regular meals were important for one's metabolism.

3.3.8.2 Interpretation of the phrase "five small meals"

When asked how they would implement "five small meals", participants explained that they would provide their children with three meals and two snacks. However despite this, most participants agreed that it was not what the guideline suggested. The term "meals" thus caused much confusion among participants, as many of them interpreted the term as a plate of food:

> *"The meals, like these meals, it's telling me that it must be big plates of food, big portions of food, maybe a plate of food. Because that's how I would understand it, I must give my child five plates of food . . . "* (FGD no. 2, Participant 5, to Samuels)

Other interpretations of the term included:

- Offering your child food fives times a day.
- Providing small portions of food to your child five times a day.
- Providing five equal sized meals, not snacks, to your child.

3.3.9 Guideline 9: "Make starchy foods part of most meals"

The ninth PFBDG also elicited much discussion, particularly around the importance of starchy foods in the diet, as well as whether the guideline should be included at all.

Participants from both formal and informal areas described starchy foods as being rice, pasta, potatoes, and bread. Additionally, formal areas specifically mentioned sweet potatoes and cereals, while informal areas mentioned maize meal, pap and samp.

With regard to the importance of starchy foods, participants explained that starches contained high amounts of energy, making them important for children, because of their high energy requirements. It was however discussed that the intake of too much starch could result in negative effects such as weight gain. It was also emphasised by some participants that the number of starches per meal should be limited and that two starches should not be combined in one meal:

> *"But I can't put the rice and the potato in the same meal."* (FGD no. 7, Participant 10, to Samuels)

In respect of the interpretation of the guideline, participants felt that too much emphasis was placed on starchy foods and, taking the eighth guideline into account ("feed your child five small meals during the day"), it could result in a starch-heavy diet and thus be interpreted incorrectly by the general public. It was stated that due to starchy foods being an affordable staple food, many families already included starch in most meals and the guideline could promote the additional intake of starch. Some participants expressed that other food groups were also important and all should be eaten in balanced or equal amounts:

> *". . . The one is not more important than the other one . . . "* (FGD no. 3, Participant 4, to Samuels)

Some participants from formal areas mentioned the "Banting" diet when discussing the ninth PFBDG, with some participants stating that a low carbohydrate diet was not designed for children, while others were unsure where it fitted in:

> *". . . actually from the Banting perspective we must eat less starches . . . "* (FGD no. 1, Participant 1, to Samuels)

Despite some participants stating that the guideline should be removed, one participant expressed that starches did in fact have a place in a child's diet and one should not confuse the requirements of adults with those of children:

> *"I think a person should be careful in differentiating between a child's needs and an adult's needs. I think adults, yes, certainly your starch intake isn't as much anymore, but children are still growing, so I think, I'm not saying their diets should consist of starches alone, but I think starches definitely have a place . . . "* (FGD no. 4, Participant 5, to Samuels)

3.3.10 Guideline 10: "Give your child milk, maas or yoghurt every day"

When discussing the final guideline, participants explained that the intake of milk, maas or yoghurt was important for children owing to the calcium content thereof. Calcium was described by all participants as being an essential component in the development of stronger bones and teeth. Some participants from formal areas also stated that dairy products, particularly yoghurt, contained probiotics important for a young child's digestion and gut.

Focus groups in formal areas yielded discussions regarding the importance of full cream products. It was stated that fat was a vital component in growing children's diets and that milk, maas and yoghurt offered to children should always be full cream. The exclusion of cheese was noted in one FGD and participants agreed that it should be added to the guideline.

3.4 Previous exposure to the PFBDG messages

Participants were asked to report on each PFBDG, whether they had heard about or seen it previously, or to report whether they were aware of similar guidelines. They were also asked to state where they had heard about or seen the guidelines before: Tables 3.2–3.8 summarise their feedback for the first seven of the guidelines.

3.4.1 Guideline 1: "Continue to breastfeed to two years and beyond"

Participants from both formal and informal areas were familiar with breastfeeding guidelines in general, with some reporting that they had in fact heard about or seen this specific guideline previously. Participants from a formal area stated that they were aware of guidelines promoting breastfeeding, but were unaware of the two-year recommendation, while some participants from informal areas reported that they had had no previous exposure to breastfeeding guidelines.

Table 3.2: Guideline 1: Previous exposure as reported by participants

Formal areas	Informal areas
Internet e.g. WHO, La Leche Breastfeeding clinics Road-to-Health Booklet Books, pamphlets Magazines Baby food products Support groups Facebook groups Family, friends Crèches	Clinics, hospitals Training courses (for caregivers) Pamphlets Magazines Talks at preschool Family

3.4.2 Guideline 2: "Gradually increase the amount of food, number of feedings and variety as your child gets older"

All participants from both formal and informal areas had been exposed to this guideline or a similar guideline, with the exception of a few participants from an informal area.

Table 3.3: Guideline 2: Previous exposure as reported by participants

Formal areas	Informal areas
Internet	Clinics, hospitals
Breastfeeding clinics	Nurses
Road-to-Health Booklet	Posters, pamphlets
Books, magazines	Formula milk tins
Friends	Dietitians

3.4.3 Guideline 3: "Give your child meat, chicken, fish or egg every day, or as often as possible"

Most of the participants were familiar with guidelines promoting the intake of protein, although some participants from formal areas stated that they had never heard about or seen a guideline written in those specific words previously. Some participants from an informal area reported that they had never heard about or seen this guideline or one similar to this previously.

Table 3.4: Guideline 3: Previous exposure as reported by participants

Formal areas	Informal areas
Paediatricians	Clinics, hospitals
Books	Nurses
	Clinic books
	Training courses (for caregivers)
	Schools

3.4.4 Guideline 4: "Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day"

Participants from both formal and informal areas reported that they had been exposed to guidelines promoting fruit and vegetable intake previously, but had never heard about or seen guidelines specifically highlighting the intake of dark-green leafy vegetables and orange-coloured vegetables.

Table 3.5: Guideline 4: Previous exposure as reported by participants

Formal areas	Informal areas
Internet	Clinics

3.4.5 Guideline 5: "Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child"

Participants reported previous exposure to guidance that advocates the avoidance of unhealthy drinks and snacks, but had never heard about or seen this specific guideline previously.

Table 3.6: Guideline 5: Previous exposure as reported by participants

Formal areas	Informal areas
Books	Clinics Doctors Dentists Dietitians Crèches Television

3.4.6 Guideline 6: "Hands should be washed with soap and clean water before preparing or eating food"

Participants from both formal and informal areas reported that the sixth PFBDG was the guideline most heard about or seen.

Table 3.7: Guideline 6: Previous exposure as reported by participants

Formal areas	Informal areas
Internet Books Schools Family Crèche posters	Clinics Books Schools Family Workplaces Crèches Public places Television, radio

3.4.7 Guideline 7: "Encourage your child to be active"

Participants stated that they had been exposed to the seventh PFBDG previously, with the exception of a few participants from an informal area.

Table 3.8: Guideline 7: Previous exposure as reported by participants

Formal areas	Informal areas
Books Health magazines Antenatal classes Road-to-Health Booklet	Clinics Books Youth centres Training courses (for caregivers)

3.4.8 Guideline 8: "Feed your child five small meals during the day"

Participants from both formal and informal areas reported that they had had no previous exposure to the eighth PFBDG. They were only aware of guidance to provide children with three meals and two snacks and were thus unaware of the "five small meals" recommendation.

3.4.9 Guideline 9: "Make starchy foods part of most meals"

Participants were not familiar with the guideline promoting the intake of starchy foods, nor were they exposed to any other similar guidance from other sources.

3.4.10 Guideline 10: "Give your child milk, maas or yoghurt every day"

Some participants were aware of guidelines promoting the intake of milk but were not familiar with this specific guideline, while others had no previous exposure to guidelines promoting the intake of dairy products.

3.5 Participants' proposed suggestions

Participants were asked whether each PFBDG required changing or rephrasing. The proposed suggestions can be seen below.

- **Guideline 1: "Continue to breastfeed to two years and beyond"**
  - Changes to consider:
    - Continue or try to breastfeed for one year.
    - Breastfeed from birth until at least one year.
    - Breastfeed for two years or longer.
  - Additions to consider:
    - Add the phrases "breast is best" or "if possible" or "give it a try".
- **Guideline 2: "Gradually increase the amount of food, number of feedings and variety as your child gets older"**
  - Additions to consider:
    - Add the phrase "a more nutritious variety".
    - Add the phrase "have different food groups in one meal".

  - Explanations to consider:
    - Explain the word “variety”.

- **Guideline 3: “Give your child meat, chicken, fish or egg every day, or as often as possible”**
  - Changes to consider:
    - Give your child proteins such as meat, chicken, fish or eggs, or legumes.
    - Give your child the proteins every day, for example . . .
    - Be sure that your child gets one of these each day in a week . . .
  - Additions to consider:
    - Add cheaper protein sources.
    - Add vegetable protein sources.
    - Add the phrase “or any other source of protein”.

- **Guideline 4: “Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day”**
  - Changes to consider:
    - Include a variety of different colours, especially green and orange.
    - Give your child fruit and vegetables.
  - Additions to consider:
    - Provide examples and pictures of dark-green leafy and orange-coloured vegetables.

- **Guideline 5: “Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child”**
  - Additions to consider:
    - Provide examples of high-sugar drinks and high-sugar, high-fat salty snacks.

- **Guideline 6: “Hands should be washed with soap and clean water before preparing or eating food”**
  - Changes to consider:
    - Wash your hands regularly when you are working with a baby.
  - Additions to consider:
    - Add the phrase “after you use the toilet”.

- **Guideline 7: “Encourage your child to be active”**

  - Additions to consider:
    - Add the words “physically” or “move” or “movement”.
    - Add the word “daily”.

- **Guideline 8: “Feed your child five small meals during the day”**
  - Changes to consider:
    - Three meals and two snacks in between.
  - Additions to consider:
    - Add the phrase “per day”.

- **Guideline 9: “Make starchy foods part of most meals”**
  - Changes to consider:
    - Eat something from each food group in balanced amounts.
    - Give all food groups equally.
  - Additions to consider:
    - Add the phrase “whole wheat starches”.
    - Provide examples of starchy foods.

- **Guideline 10: “Give your child milk, maas or yoghurt every day”**
  - Additions to consider:
    - Add the phrase “full cream”.
    - Add the word “cheese”.

Some participants felt that important aspects had been omitted from the PFBDGs. Therefore, the following guidelines/points were suggested by participants for inclusion:

- Avoid processed foods.
- Promotion of correct food preparation techniques.
- Addition of healthy fats for children.
- Five food groups.
- Breakfast is an important meal.
- Low glycaemic index breakfast for your child.

3.6 Possible barriers to the implementation of the Paediatric Food-Based Dietary Guidelines

During the FGDs, participants were asked to discuss possible barriers that might influence a family's ability to implement the PFBDGs. Strong themes to emerge included cost and affordability, time constraints, accessibility, and marketing.

3.6.1 Cost and affordability

Financial constraints were discussed by participants as being the biggest barrier to the implementation of dietary guidelines. Participants from both formal and informal areas explained that people in poor communities often did not have the money to implement the guidelines, as they could not afford to buy the different types of food recommended. One participant expressed:

> *"... if you don't have money to buy these things, it's not that you don't want to, it's just that the things are expensive."* (FGD no. 5, Participant 6, to Samuels)

Guidelines promoting a variety of foods, protein intake, fruit and vegetable intake, five small meals, as well as the intake of dairy products were all discussed by participants as being expensive and thus difficult to implement.

A participant employed at a crèche in a less-advantaged neighbourhood stated that teachers often tried to implement the dietary guidelines at school, as they were aware that the parents might not be able to provide nutritious food for their children at home. She further noted that the parents of these children struggled financially and therefore the school tried to provide the children with healthy food in sufficient amounts since they were unsure whether the children would receive anything at home:

> *"... we don't know if the child is going to eat again after hours."* (FGD no. 2, Participant 1, to Samuels)

3.6.2 Time constraints

Time constraints was also discussed as being a barrier to implementing the PFBDGs. Participants explained that they often did not have the time to prepare and cook a meal, which was in line with the guidelines, due to a lack of time. One participant stated that time constraints were not only applicable to people living in formal areas, but also to those from informal, poorer areas:

> *"I also think time for people who work long hours, it also makes it difficult to now just grab a quick thing which is unhealthy, but to actually prepare a variety of foods takes more time. That goes for both people like us that are busy with stuff and poor people who just travel long hours and work long hours and just see their families generally for a very short time."* (FGD no. 3, Participant 2, to Samuels)

Some participants linked reduced energy levels with time constraints as they stated that they often got home from work exhausted and did not have the energy to cook a big meal for the family. Some participants stated that they would then choose to cook a simple meal with no vegetables to save time and energy.

3.6.3 Accessibility

Poor accessibility to food was discussed by some participants as being a factor hindering their ability to implement the guidelines. It was stated that some people living out of town or on a farm might not have close access to a supermarket to purchase fresh produce, therefore making it a challenge to eat fresh fruit and vegetables daily. It was also explained by one participant that some people also might not have a refrigerator to store fresh produce, which could result in fresh foods not being purchased and consumed on a regular basis.

3.6.4 Marketing

The marketing and labelling of food were reported as being barriers to implementing healthy eating habits. One participant explained that parents were often coaxed into buying certain foods, while grocery shopping was shaped by the way the product was marketed or labelled:

> *"...a lot of the time food marketing is really designed to deceive actually quite educated people into buying things that they think are good for their children."* (FGD no. 3, Participant 3, to Samuels)

Another participant added that many products in the supermarket were marketed specifically for children with the use of pictures or aimed at parents by labelling the product as being healthy or "enriched with vitamins". She further noted that these products were often high in sugar, but the extreme marketing and labelling techniques convinced parents to buy them.

3.6.5 Other

Personal choice was listed by some participants as a factor influencing the dietary habits of a number of families. It was stated that although many parents had the knowledge, financial ability and accessibility to implement the guidelines, they might choose not to. A participant working at a crèche stated that educated parents often sent unhealthy snacks to school for their children for the sake of convenience or to keep their child happy:

> *"The other thing is choice, you can put all those things on there, but the choice remains the parents' . . . they'd rather put in something nice instead of the fruit. And that's educated people, not people who don't understand. They know."* (FGD no. 5, Participant 4, to Samuels)

Drugs and alcohol were also listed by some participants from informal areas as being common problems in their communities. Participants stated that both drugs and alcohol were abused by many parents and had a direct effect on the health of the children in the household. One participant explained that a lack of money was not always necessarily the reason for not purchasing fresh and healthy food, but that parents would rather spend their money on drugs and alcohol:

> *"The parents use drugs and then they don't have time. Because they do have the money, but then they'd rather spend that money on drugs or alcohol."* (FGD no. 2, Participant 1, to Samuels)

Drug and alcohol abuse were also mentioned by participants as being challenges to successful breastfeeding, as discussed in Sections 3.3.1.1 and 3.3.1.2.

3.7 Possible enabling factors of the implementation of the Paediatric Food-Based Dietary Guidelines

Participants were asked to report on the possible factors that might enable parents to implement the PFBDGs. Important themes discussed among participants included education, the effectiveness of visual effects, improved marketing techniques and improved accessibility to and availability of food.

3.7.1 Education

The importance of improving education was discussed in FGDs as a strong theme. Participants from both informal and formal areas reported that many people were not educated about healthy eating and that the provision of knowledge and information could improve practices.

3.7.1.1 Parents and caregivers

A suggestion made by participants was to improve the knowledge of parents and caregivers, with regard to nutrition. Participants also mentioned that children often mimicked their parents' actions and it was thus essential to teach families how to follow a healthy lifestyle:

> *"Children copy, they learn from you. You can't expect your child to eat something else while you're eating McDonald's. So it should be an educational process to teach families to eat correctly, because if the whole family is eating properly, then the child will automatically eat better. But as families we don't always eat what we should be eating, and therefore our children also don't eat what they should eat."* (FGD no. 4, Participant 2, to Samuels)

One participant also explained that caregivers appointed to look after children, as well as husbands/partners, should be educated on dietary guidelines for children. She stressed the importance of not limiting the education to mothers:

> *"... everyone should know, not only the mothers."* (FGD no. 4, Participant 1, to Samuels)

3.7.1.2 Schools

Participants explained the importance of educating children at a young age at school to teach them about health. It was stated that educating learners and ensuring that the guidelines were implemented in schools could result in healthier dietary practices among children at school and also at home. One participant also explained that by targeting schools, parents and caregivers could also be reached:

> *"I think it will also be enabling to discuss this at school with children because I think education plays a big role in how much knowledge you have about these things, so I think it is a way to reach families if you can get to the school."* (FGD no. 3, Participant 2, to Samuels)

One participant stated that children often learn visually and suggested the use of a video to educate children. Her suggestion included showing them a video of the health effects associated with unhealthy foods and actions:

> *"... if you play a video, and have some things that shows how a person becomes when you eat sugar, if you didn't wash your hands you develop something, you understand things like that, so that they can notice, or a video of someone drinking liquor and see how a person ends up being like."* (FGD no. 9 to Nqakala)

3.7.1.3 Health professionals

Some participants also mentioned the need to educate health professionals such as doctors and paediatricians, and that the provision of information should not be limited to parents. One participant explained that some mothers would rather follow the recommendations of the paediatrician, even if they conflicted with prior knowledge. She therefore stated that the information provided to mothers regarding infant feeding should coincide with the recommendations made by health professionals:

> *"... it doesn't help for you to educate the parents, and then the mother goes to the paediatrician and he doesn't tell her half of these things, he tells her something else."* (FGD no. 4, Participant 3, to Samuels)

3.7.1.4 Communities

Participants touched on the importance of informing the public and communicating health information to individuals in their communities. One participant stated:

> *"It must be announced in the communities where we live."* (FGD no. 6, Participant 6, to Jikela)

Participants also explained that educational material should be put up in public places all around the community. One participant stated that posters should be put up in busy places such as in clinics, police stations and train stations, to ensure the messages reach a large portion of the community. Participants also explained the importance of educational talks aimed at informing the public about dietary guidelines and health.

Furthermore, one participant suggested that the media be used to educate the public:

> *"If we can explain it to the people and broadcast it on TV and radios."* (FGD no. 6, Participant 1, to Jikela)

3.7.2 Visual effects

Discussions around factors enabling the implementation of the PFBDGs revealed the importance of colours and pictures. Participants explained that posters displaying the PFBDGs required visual effects to encourage the public to read them. One participant stated that she would not be enticed to read the guidelines as they were displayed in the FGD:

> *"...it must catch your eye. It must be interesting to want to read. If I'm going to see that poster at a doctor's or at a hospital, I'm not going to read it because it's dull, there's nothing that's trying to get my focus, but if it's interesting and it's colourful, you want to go see what it is and you want to go read it."* (FGD no. 8, Participant 2, to Samuels)

Participants expressed the need for colourful pictures displaying the different types of foods recommended in the guidelines. Participants also suggested the inclusion of a plate model and pictures of the recommended portion sizes. The printing and distribution of pamphlets were also suggested to promote the PFBDGs.

3.7.3 Improved marketing techniques

As discussed in Section 3.6.4, extreme marketing could act as a barrier to the promotion of dietary guidelines. Participants therefore stated that improved marketing techniques and labelling regulations were necessary to ensure transparency and thus result in healthier practices. One participant explained that she had read a study in which fruit and vegetables were marketed with the use of stickers for children:

> *"...they put little stickers on apples and apparently it made them much more popular among children. So, positively branding fruit and vegetables may actually help that situation where you are shopping with your child and your child wants to buy the apple, banana or the broccoli because it looks appealing."* (FGD no. 3, Participant 3, to Samuels)

Furthermore, it was suggested by some participants that regulations and legislation should exist to control the marketing of foods, as well as food labels.

3.7.4 Improved accessibility and availability

Participants explained the importance of improving access to and availability of food to the public by ensuring good access to supermarkets. The need for supermarkets to provide healthy and affordable alternatives was also discussed by one participant, as well as the importance of incentives or subsidies for those less fortunate:

> *"...also supermarkets and like, they should offer food at a comparable price to like your fast food and your sweets. There should be a cheap healthy option or a government subsidy that you could apply for to buy healthy stuff at a cheaper rate; if you are under a certain income you should be able to get a card, or some kind of incentive to enable poor people to be able to afford a healthy diet."* (FGD no. 3, Participant 1, to Samuels)

Chapter 4

Discussion

This study explored the appropriateness and understanding of the revised set of PFBDGs among mothers/caregivers of children between the ages of 12–36 months. Each guideline was assessed individually to gain insight into participants' understanding and interpretation thereof, to determine previous exposure and sources of information, as well as to determine the barriers to and enablers of the implementation of the guideline. The purpose of this chapter is to reflect on the research objectives and to synthesise the main findings in order to answer the research question.

4.1 Understanding and interpretation of the Paediatric Food-Based Dietary Guidelines

In this section, participants' understanding and interpretation of each PFBDG is summarised and discussed.

4.1.1 Guideline 1: "Continue to breastfeed to two years and beyond"

The first PFBDG promoting continued breastfeeding resulted in in-depth and emotional discussions among participants and was the guideline that elicited the most discussion. Participants demonstrated a clear understanding of the importance of breastfeeding and the benefits thereof. Despite this, many barriers associated with breastfeeding were described, which, as many participants explained, made the guideline challenging.

Participants discussed the benefits of breastfeeding, highlighting that breast milk was the best nutrition for children and resulted in improved brain development, stronger bones and teeth and enhanced immunity. Recent data on the benefits of breastfeeding indicates that breastfed infants have a reduced risk of mortality and are protected against diarrhoea and respiratory infections.[48] Breastfeeding is also associated with

higher intelligence.[48] The maternal benefits of breastfeeding were also discussed by participants, mainly that breastfeeding mothers have a reduced risk of cancer, which is in line with the literature described in Section 1.7.1.

The importance of breastfeeding, particularly for mothers with a low socio-economic status, was highlighted by some participants. It was explained that poorer mothers would benefit more from breastfeeding, as they would not be able to afford the alternative. Recent breastfeeding statistics indicate that continued breastfeeding is more prevalent among poorer mothers than richer mothers.[48] The 2016 Lancet Breastfeeding Series, however, highlights the importance of breastfeeding for all mothers and children, regardless of their financial status.[48] The benefits of breastfeeding are thus far-reaching. Not only does breastfeeding improve the health of individuals in populations where infectious diseases are rife, it has also been associated with a reduction in mortality in high-income countries from necrotising enterocolitis and from sudden infant death syndrome.[48]

The challenges associated with breastfeeding were discussed by participants and included the perception of not having enough breast milk, stress resulting in poor milk production, breast and nipple problems, substance abuse, mixed messages from paediatricians and nurses, a lack of information, breastfeeding in the workplace, breastfeeding in public, as well as a lack of support. These are fundamental and significant barriers to continued breastfeeding. The undermining presence of these challenges is however not merely a manifestation of recent years and modern-day pressures. An article published more than 30 years ago on breastfeeding in South Africa described a number of factors affecting breastfeeding which closely resonated with the sentiments expressed by the participants in this research study, conducted in 2015. These factors included economic factors, advertising and commercial pressures, the example set by the higher socio-economic group, changing values and status symbols, competing ideologies, the perception of not having enough breast milk, cultural bias for fat babies, presence or absence of support, influence of health education, hospital policies, a lack of support in the first critical days, and a lack of confidence in the ability to breastfeed.[97] From this article it is clear that factors affecting and determining breastfeeding practices have been prevalent for many years and it seems as if little, if any, progress has been made to support, promote and protect breastfeeding in South Africa. These factors coincide with the determinants of breastfeeding summarised by Rollins et al.,[98] in the 2016 Lancet Breastfeeding Series (Figure 4.1). The components described include structural determinants, settings, and individual determinants, which affect breastfeeding practices by inhibiting early initiation, exclusive breastfeeding and continued breastfeeding.[98]

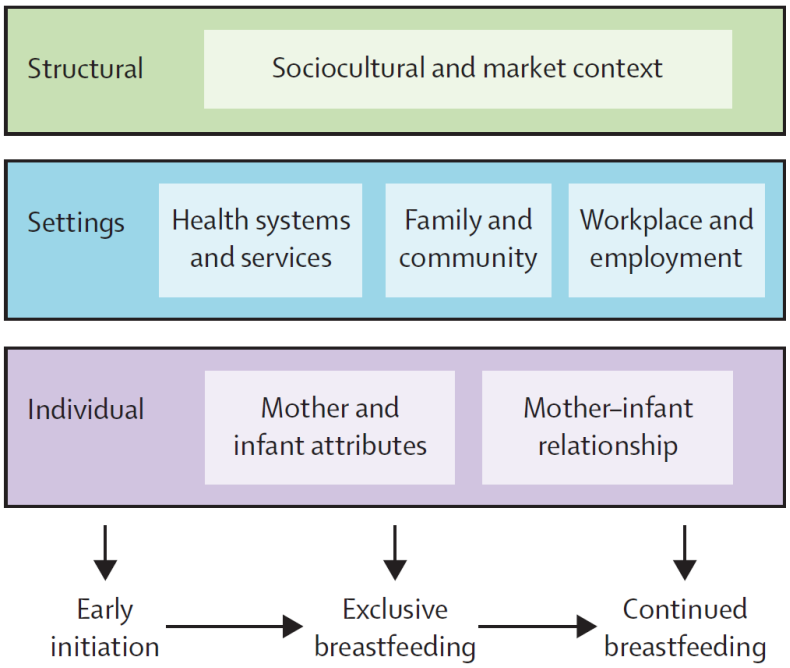


Figure 4.1: The components of an enabling environment for breastfeeding[98]

The settings resulting in multiple barriers include health systems and services, family and community, and the workplace and employment.[98] The workplace remains one of the major barriers to breastfeeding for many mothers. Smith et al.[99] investigated breastfeeding support in the Australian workplace by assessing the effect returning to work had on mothers' breastfeeding intentions and outcomes, as well as the barriers to and enablers of breastfeeding in the workplace. Results indicated that among mothers who returned to work within six months after the child's birth, 13% reported that breastfeeding initiation was influenced by returning to work, 58% reported reducing or stopping breastfeeding as a result of returning to work, while 8% reported that if breastfeeding were supported in their workplace, they would have returned to work sooner.[99] Enablers of breastfeeding were reported to include having support for continued breastfeeding from the workplace and supervisors, having workplace facilities for expressing and storing breast milk, and having more flexible working hours.[99] Reported barriers to a mother's breastfeeding intentions included time pressures, separation from the child, difficulties expressing and maintaining an adequate milk supply, lack of facilities available to breastfeed or express, not being provided with lactation breaks, as well as a lack of support from other employees and employers.[99] Addressing these barriers and providing mothers with an enabling working environment have been shown to have beneficial effects on productivity, performance, commitment, absenteeism and retention.[100,101]

Global achievements towards maternity protection include the adoption in 2000 of the International Labour Organisation Maternity Protection Convention (C183) and Recommendation (R191), which aim is to promote equality of women in the workplace.[101–103] The Convention provides minimum requirements for the provision of maternity leave of not less than 14 weeks, as well as one or more daily lactation breaks or a reduction in working hours, once returned to work.[102] The Recommendation promotes the provision of facilities for breastfeeding or expressing under hygienic conditions at or near the workplace.[103]

On closer review in South Africa, achievements have been made towards maternity protection and the promotion of breastfeeding within the workplace. Women are entitled to four months of maternity leave according to the Basic Conditions of Employment Act.[104] In 2011, the Tshwane Declaration resolved that legislation be reviewed to protect and extend maternity leave, and for measures to be implemented to ensure that all workers benefit from maternity protection, and an enabling workplace.[36] The IYCF policy has also set an objective to advocate for the creation of supportive working environments for mothers to promote exclusive and continued breastfeeding.[34] The policy advocates for the adoption of breastfeeding policies in the workplace which should include the provision of a private, hygienic area for breastfeeding employees to express and store their breast milk, lactation breaks, the establishment of childcare facilities at or near the workplace, and raising awareness regarding the benefits of breastfeeding amongst employees and employers.[34] The Code of Good Practice on the protection of employees during pregnancy and after the birth of a child has been included in the Basic Conditions of Employment Act. In an effort to protect the health of pregnant and breastfeeding women, the Code states that arrangements should be made for pregnant and breastfeeding employees to be able to attend antenatal and postnatal clinic visits. It also highlights that during the first six months of a child's life, breastfeeding mothers should be provided with 30 minute lactation breaks twice a day to breastfeed or express.[105]

Although some measures are in place to protect and promote breastfeeding in the South African formal workplace, mothers continue to experience challenges as a result of a lack of implementation. Without the support of the workplace, these challenges will continue to affect exclusive breastfeeding rates in the country as well as continued breastfeeding and the implementation of the first PFBDG. Mothers working in the informal sector are especially vulnerable, since there is currently no maternity protection for this work environment.

Breastfeeding in public is another common challenge experienced by most mothers. Participants in this study reported a stigma around breastfeeding in public and therefore many of them felt uncomfortable feeding their children in public spaces as a result of the judgement and stares they received. The lack of facilities available for mothers often resulted in their using a toilet stall to breastfeed their children. Literature indicates that public breastfeeding is not widely accepted. Li et al.[106] reported on public beliefs regarding breastfeeding policies in various settings and found that only 43.1% of study participants believed that women should have the right to breastfeed in public, while 40.7% believed that rooms should be made available in public buildings for breastfeeding. Breastfeeding mothers are also seen in a more positive light when breastfeeding privately rather than in public.[107]

A lack of support for breastfeeding mothers is often a barrier to successful and continued breastfeeding. Participants reported that breastfeeding was challenging without support from family and friends. Breastfeeding support provided to mothers can have beneficial effects on the breastfeeding experience and its duration. A review conducted by Britton et al.[108] aimed at assessing the effectiveness of support for breastfeeding mothers, reported that the duration of breastfeeding, partial or exclusive, increased with all forms of extra support analysed together. Strategies to support breastfeeding mothers could be in the form of professional or peer support programmes.[109] The MBFI promotes breastfeeding support through the Ten Steps to Successful Breastfeeding with the final step: “Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.” Breastfeeding support during the postnatal period is vital as it allows mothers to gain the necessary information and assistance to prevent or address common concerns and barriers to breastfeeding.[110]

The Tshwane Declaration declared South Africa as a country that actively promotes, protects and supports exclusive breastfeeding.[36] Actions towards commitment and capacity building for breastfeeding are thus essential in moving forward. Efforts to “normalise” breastfeeding within the country and the promotion of a breastfeeding-friendly society are necessary to address common breastfeeding challenges and make substantial progress towards reaching the stated resolutions.

4.1.2 Guideline 2: "Gradually increase the amount of food, number of feedings and variety as your child gets older"

The introduction of complementary foods was discussed by participants with the overall opinion being that infants should be introduced to solid foods at the age of six months. In formal areas, some participants discussed a change in the recommendation for the introduction of complementary foods, however the reported changes did not always correspond, with some participants reporting a change from four to six months and others six to four months. In 1990, the Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding was adopted that declared that all infants should be exclusively breastfed from birth to 4–6 months.[111] In 2001, a report on the optimal duration of exclusive breastfeeding concluded that the recommendations be amended to promote exclusive breastfeeding for six months, with the introduction of complementary foods and continued breastfeeding thereafter.[112] The WHO and UNICEF amended the global recommendation for exclusive breastfeeding accordingly, as is reflected in the 2003 Global Strategy for IYCF.[43]

The comments around the change of the guideline from six to four months could be due to research around early sensitisation and the introduction of potentially allergenic foods between 4–7 months. According to the ESPGHAN Committee, both the early and the late introduction of potentially allergenic foods should be avoided.[57] For the South African population, guidelines promoting exclusive breastfeeding for six months should be advocated, with the introduction of complementary foods at six months and "not later than seven months".[60]

The term "variety" was investigated and most participants interpreted it as "different kinds of food". A study assessing the adult FBDGs reported similar results with regard to the term for the guideline "enjoy a variety of foods".[96] Some participants from one informal area, however, had trouble understanding the term, which could be due to a language barrier.

According to participants, the amount of food a child eats depends solely on the child, as they would often indicate to the mother/caregiver whether they have had enough food or want more. This is in accordance with the concept of responsive feeding (Section 1.7.2), which is based on the premise of allowing children to develop the skills necessary to self-regulate and control their own food intake.[55]

The process of increasing the amount of food, number of feedings and variety was described by participants as being essential for growth, development and meeting increasing nutritional needs. The participants' overall understanding and interpretation

of the guideline and the importance thereof was in line with the literature described in Section 1.7.2.

Although a common understanding and interpretation of the guideline exists, research conducted in the country indicates that dietary diversity and variety are poor. Dietary diversity is an indicator used to determine the nutritional adequacy of the diet of individuals in a country.[113] The dietary diversity score of children was determined by secondary analysis of the 1999 NFCS data and findings were reported on the number of food groups consumed over a period of 24 hours, out of nine food groups.[113] A dietary diversity score of 9 was indicative of a varied diet. Upon calculation, it was found that children between the ages of 1–3 years had a dietary diversity score of only 3.5, indicating that the variety present in the diet of young children is limited and inadequate.[113] These results are significant when considered together with the state of food insecurity in the country. Dietary diversity and variety play an important role in food security, thus food security is often compromised when the dietary diversity and variety are inadequate.[113] The adult and paediatric FBDGs promoting the intake of a variety of foods therefore are essential in increasing the dietary diversity in the country and thus improving food security.

4.1.3 Guideline 3: "Give your child meat, chicken, fish or egg every day, or as often as possible"

Discussions on the third PFBDG revealed that participants associated it with the intake of protein, which was described as being essential for growth and muscle development. Participants' understanding of the importance of the guideline was in line with the literature summarised in Section 1.7.3. However, the overall interpretation and understanding of the guideline was not consistent amongst all participants. Many participants understood that a protein source, namely meat, chicken, fish or egg, should be given to a child every day, if possible. Confusion arose among some participants from informal areas, as their interpretation was to provide all four sources listed in the guideline every day. Similar findings were reported in the recent testing of the PFBDGs for the 0–12 month age category.[114] This confusion indicates that the guideline may be misinterpreted and requires clarification.

The exclusion of economical or plant-based protein sources from the guideline was highlighted by most participants from both formal and informal areas. Although plant-based protein sources by themselves are not sufficient to meet micronutrient requirements,[49] they can be present in the diet of infants and young children in conjunction with animal sources.

Table 4.1 illustrates 2015 food prices and the rate of inflation of protein sources in South Africa. Chicken, beef and ham were some of the most expensive sources of animal products, while beans remained one of the most economical sources of protein per kilogram.[115] Common concerns regarding the intake of beans and other legumes, however, include flatulence, unfamiliarity and a long preparation time, as dried beans require overnight soaking and hours of cooking.[116] The price of polony is also low, making it a commonly consumed food amongst individuals from a low socio-economic status. Polony is, however, considered a highly processed food and as a result is high in sodium and nitrites.[117] The sodium content of processed foods together with a number of other foodstuffs has been addressed recently in South Africa through the release of the regulations relating to the reduction of sodium.[118] This legislation will ensure that the sodium content of processed foods, such as polony, is reduced to a more acceptable level by June 2019.[118] Although this strategy will result in improvements in the population's sodium intake, more needs to be done to promote healthier choices, especially with regard to economical protein sources. Infants and young children should not only be exposed to the cheapest sources, as these products are not always the healthiest option.[60] Including economical or plant-based protein sources in the third PFBDG, such as legumes (dry beans, split peas, lentils and soya) and peanut butter, may be beneficial and will address the concerns raised by participants in the study.

Table 4.1: South African food price trends: protein sources[115,119]

Food type	Price (rand) Jan 2015	Inflation (%) Jan 2014 – Jan 2015
Tinned fish (excl tuna) - 425g	13.87	3.05
Tinned tuna - 170g	16.16	2.73
Peanut butter - 400g	23.68	3.90
Beans per kg	25.71	4.26
Eggs - 1.5 dozen	33.30	10.74
Polony per kg	36.43	8.29
Whole chicken - Fresh per kg	49.85	9.28
Beef mince - Fresh per kg	65.49	4.22
Ham per kg	103.34	7.03
Beef rump Steak - Fresh per kg	107.08	10.62

4.1.4 Guideline 4: "Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day"

The intake of fruit and vegetables was described by participants from both formal and informal areas as important owing to their vitamin and mineral content. However, the importance of dark-green leafy and orange-coloured vegetables was not understood by all participants. Some participants from formal areas described that dark-green leafy vegetables contain iron, calcium and antioxidants while orange-coloured vegetables contain beta-carotene and Vitamin A. Other participants were aware that different coloured vegetables contain different nutrients, making the intake of a variety of vegetables important, however they were unaware of the specific importance of the vegetables singled out in the guideline. The understanding of the guideline was also tested by asking participants to provide examples of dark-green leafy and orange-coloured vegetables. Participants from formal and informal areas provided examples of orange-coloured vegetables with ease, including carrots, butternut and pumpkin. When asked to provide examples of dark-green leafy vegetables, most participants identified spinach, but were unsure of other vegetables such as broccoli and cucumber.

The results thus indicate that although the participants may understand that the intake of fruit and vegetables in general is important for health, their comprehension of this specific guideline may be poor and confusion may result from the lack of examples provided. It should also be noted that there was hardly any mention of fruit during the discussions, as participants predominately focused on vegetables. The fruit aspect of the guideline may thus be lost and should therefore receive more emphasis.

A similar study assessing the appropriateness of the preliminary FBDGs for adults found that when discussing the guideline promoting the intake of fruit and vegetables, study participants' understanding of the quantity of fruit and vegetables to be consumed daily was below the minimum recommended amount.[96] The author thus suggests that supplementary information be provided for this FBDG in terms of the quantity to be consumed every day as well as how it can be achieved.[96] This information should also be provided for the PFBDG promoting fruit and vegetable intake to ensure that mothers/caregivers exposed to the guideline are aware of how many servings of fruit and vegetables a child should be offered every day, and examples of dark-green leafy vegetables and orange-coloured vegetables and fruit should be indicated in the supplementary material in order to avoid confusion. Supplementary material should also explain why the focus of the guideline is on dark-green leafy vegetables and orange-coloured vegetables and fruit, rather than all vegetables and fruit.

4.1.5 Guideline 5: "Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child"

The guideline promoting the avoidance of tea, coffee, sugary drinks and high-sugar, high-fat salty snacks was well understood and interpreted. However, participants disagreed with the recommendation to avoid the intake of tea. Although there was consensus on the avoidance of Ceylon tea, participants perceived rooibos tea to be a healthy drink for children. The avoidance of tea also went against the advice received by some participants from their paediatricians, as the health professionals often told them to give their children rooibos tea. The marketing of rooibos tea for children and the variety of flavours available on the market also led to the perception that rooibos tea should be given to children.

Rooibos tea has received growing attention in the past 50 years and has become a popular drink among most South Africans. The benefits of rooibos tea were noted by Annique Theron, which resulted in her opening a business promoting rooibos tea as well as marketing a skin care range containing extracts from the rooibos plant. According to her business's promotional material and website, in 1963 Theron discovered the calming and soothing effect of rooibos tea when she gave it to her allergic baby in a bottle which resulted in her baby sleeping throughout the night.[120] Since then, rooibos tea has been marketed for children, with Theron's website stating: "If your little one suffers from colic, insomnia, food allergies, stomach cramps or eczema, Annique's Rooibos tea is the perfect answer to your problems."[120] These claims are however not supported by scientific evidence. Studies have shown that rooibos tea is caffeine free, low in tannins and contains antioxidants which fight the effects of free radicals and may provide protection against mutagenesis.[121,122] Despite these findings and the claims made by Theron, scientific research regarding the beneficial effects of rooibos tea, especially for children, is limited.

From this study, it is clear that mothers and caregivers have a strong belief in the effects of rooibos tea. Because it is caffeine free and low in tannins, rooibos tea is a better alternative to Ceylon tea, coffee and sugary drinks. It does not affect iron absorption in children and does not contain sugar when consumed on its own. Thus it can be given to children (after the age of 12 months) in the place of water and when diluting fruit juice. However, rooibos tea remains a non-nutritive beverage and should not displace the intake of breast milk in the diet of infants and young children. Large quantities should be avoided as it could replace the intake of food and drinks containing vital nutrients for adequate growth and development.[62]

Participants' perceptions regarding the effects of sugary drinks and high-sugar, high-fat

salty snacks were in line with the literature outlined in Section 1.7.5. Participants considered these foods and drinks to be “junk food” and reported negative effects, particularly on a child’s teeth and weight. In order to assess the overall understanding of the guideline, participants were asked to provide examples of the sugary drinks and high-sugar, high-fat salty snacks. It was clear from the examples provided that the participants were aware of the types of foods and drinks to be avoided, as recommended by the guideline.

Fruit juice was an example of a sugary drink listed by participants from both formal and informal areas. Literature suggests that fruit juice should be avoided in infants and young children or intake should not exceed 180ml per day.[73] Fruit juice should also be diluted with water.[123] Similar to tea and coffee, excessive amounts of fruit juice can suppress appetite and displace nutrient-dense foods.[49] It also contributes to diarrhoea, malnutrition and dental caries.[73] According to the American Academy of Pediatrics, infants and young children should not be given fruit juice in a bottle, due to the increased risk of dental caries.[73] Parents should also not rely on fruit juice to meet their children’s daily, recommended fruit intake.[73]

Despite the fact that participants understood and interpreted the guideline correctly, with the exception of the avoidance of tea, issues arose during discussions regarding its implementation. Children were either given unhealthy snacks by their parents to take to school in an effort to show off their wealth, or the crèche provided unhealthy snacks to children without the knowledge and approval of parents. To address these issues, government and other early childhood development policies should be put in place to control the types of food and drinks given to children and brought into these facilities.

Supplementary material should be provided containing examples of healthy snacks appropriate for children within this age group. Clarity on why the guideline highlights the avoidance of tea should also be provided.

4.1.6 Guideline 6: “Hands should be washed with soap and clean water before preparing or eating food”

Participants from both formal and informal areas were the most familiar with the guideline promoting hand washing and hygiene. Their understanding of the guideline was in accordance with the literature outlined in Section 1.7.6, namely that hand washing is vitally important for preventing the spread of germs and disease.

Hand washing and hygiene not only prevent the spread of germs and disease, but are also directly related to nutritional status, with recent evidence suggesting an association

between water, sanitation and hygiene (WASH) and undernutrition in children.[124] Rah et al.[125] assessed the association between WASH and stunting in rural India and reported that the risk of stunting among children between the ages of 0–23 months reduced with household access to toilet facilities. A 15% reduction in stunting was found when mothers/caregivers reported washing their hands with soap before a meal or after defecation. These results indicate that improved WASH practices affect the linear growth of infants and young children, making nutritional programmes and guidelines promoting hand washing and hygiene among children and mothers/caregivers of utmost importance.[125]

Levels of access to clean water services in South Africa remain a concern. Despite the fact that 72.8% of South African households have direct access to water from taps, either through a house connection or an on-site tap, 13.9% of households rely on public or communal taps while 13.3% of households rely on water from boreholes, streams, rivers and dams, amongst others.[126] This indicates that many households do not have direct access to clean, safe sources of water, thus making it difficult for some individuals to implement this guideline.

The Department of Water Affairs should be commended on the progress made in the country, but should also be made aware of the association between WASH and undernutrition. The Department should be sensitised about its role in the success of nutrition-sensitive interventions, especially through the provision of WASH to communities. The community at large should also be made aware of the importance of water conservation and basic hygiene practices in the context of infant and young child health.

4.1.7 Guideline 7: “Encourage your child to be active”

The guideline promoting activity is not food-based; however it has been included in the PFBDGs to promote a holistic and healthy lifestyle among children.

Participants living in formal and informal areas described activity as essential to children’s health, growth and overall development. The link between activity and obesity was also highlighted and the participants’ opinions were that the guideline emphasised “physical” activity rather than mental activity. The understanding and interpretation of the PFBDG was thus in accordance with the evidence outlined in Section 1.7.7.

Supplementary material should be provided clarifying the amount of activity a child between the ages of 12–36 months should be exposed to daily. Examples of different types of activities applicable to children within this age category should also be provided.

4.1.8 Guideline 8: "Feed your child five small meals during the day"

The eighth PFBDG resulted in the most confusion among participants. Although the understanding of the importance of regular meals was in line with the literature described in Section 1.7.8, namely owing to infants' small gastric capacity, the word "meals" was misunderstood by most participants. With regard to the implementation of the guideline, some participants explained that they would interpret "five small meals" as three meals and two snacks, however other participants were unsure whether the terms were in fact synonymous. A "meal" was often seen as a "plate of food" and not a snack, thus making it difficult to understand because five plates of food would be too much for a child to consume while also being impractical to implement every day.

Two studies investigating the appropriateness and understanding of the previous set of PFBDGs found similar results when assessing the third guideline stating, "gradually increase your baby's meals to five times a day".[127,128] Participants in these studies also misinterpreted the guideline as a result of the terminology used.

These results indicate that although the guideline has been updated and changed, it continues to cause confusion among mothers/caregivers. The term "five small meals" may thus have to be replaced with "at least three small meals and two snacks" to ensure a better understanding of the guideline.

4.1.9 Guideline 9: "Make starchy foods part of most meals"

Discussions around the ninth PFBDG revealed that participants found starchy foods to be important for the provision of energy for children. Despite this, participants explained that a guideline promoting the intake of starchy foods could result in weight gain. This finding coincides with a study assessing the adult FBDGs, namely that participants regarded starchy foods as being "fattening".[96] The guideline was perceived to promote a starch-heavy diet for children if starches were to form "part of most meals". Starchy foods are typically staple foods for many South Africans, thus some participants believed it unnecessary to promote foods rich in starch, as the public might misinterpret this and increase their intake of starchy foods to well above the recommended amount.

The term "starchy foods" was understood by participants from both formal and informal areas, with examples listed as rice, pasta, potatoes and bread. Sweet potatoes and cereals were listed additionally in formal areas, while maize meal, pap and samp, the most inexpensive sources of starchy foods, were included by participants from informal areas. Legumes were not mentioned by participants.

As discussed in Section 1.7.9, starchy foods form a major part of the diet of South African children, with maize meal and bread being two of the most commonly consumed staple foods among 1–9 years old children.[9] Staple foods are often the most affordable, energy-dense and accessible food sources and can form up to 70% of the total energy content of the diet in countries with high rates of poverty and food insecurity.[86] Staples are often the basis of cultural or traditional diets and to improve the nutritional content of these diets, staples and starchy foods should be used in combination with a variety of other food sources.[86] Thus, the guideline should not be interpreted in isolation, but rather together with the other PFBDGs to ensure a balanced diet.

In order to address common micronutrient deficiencies among children within the 1–9 year age group, the DoH of South Africa released regulations in April 2003 relating to the fortification of certain foodstuffs.[129] These regulations focused on the mandatory fortification of commonly consumed staple foods, namely maize meal and wheat flour, with vitamins and minerals essential for addressing micronutrient malnutrition in the country.[129] Fortification refers to the "addition of one or more micronutrients by means of a fortification mix to a foodstuff whether or not it is normally contained in a foodstuff for the purpose of preventing or correcting a demonstrated deficiency".[129] The process is relatively inexpensive and ensures an improved intake of vital nutrients without having to change a population's diet.[130]

Secondary analysis of the NFCS indicated that significant improvements were found in the intake of micronutrients among children when staple foods were fortified.[130] Despite this, the implementation of the fortification programme has been questioned. Studies aimed at assessing the micronutrient content of fortified foods found discrepancies between the recommended micronutrient content and the actual content.[131,132] These results indicate that the country's nutrient intake is inadequate, and without regular monitoring in place, the mandatory fortification programme will not be effective in reducing micronutrient malnutrition and improving child health. Thus there is a need for the fortification programme to be revived through regular monitoring and quality control to ensure that the regulations are met and adhered to.[130–132] Educating the public about the programme is also essential to ensure that they are aware of the food fortification process, recognise the logo, and purchase fortified staple foods.

The "Banting" diet was discussed by some participants from formal areas. This diet, promoted by Professor Tim Noakes, encourages the intake of low-carbohydrate, high-fat meals and has received considerable publicity.[133] Prof Noakes recently released a book aimed at child health, which is said to be a sequel to his first book, *The Real Meal Revolution*.[134] The book, titled *Raising Superheroes*, was reviewed by the Association

for Dietetics in South Africa (ADSA). The review brought to light a number of issues, such as inconsistent information regarding breastfeeding, irresponsible claims, and criticism regarding the use of infant cereals and grains, amongst others.[135] The public health approach claim is another area of concern as the book does not take into account the differences in culture, food availability and accessibility, and income among South Africans, which makes it difficult for all South Africans to follow the advice given in the book.[135] The media hype surrounding the low-carbohydrate, high-fat diet has made the implementation of the ninth PFBDG challenging, as the stigma around high-carbohydrate starchy foods has been exacerbated.

Misconceptions regarding the intake of starchy foods, especially among children, should be addressed in the supplementary material of the PFBDG to ensure that the guideline is interpreted and implemented correctly and not simply ignored. Examples of starchy foods should be included to promote the intake of a variety of healthy foods rich in starch, together with the recommended servings and portion sizes for children. Attention should also be placed on food fortification and the promotion of unrefined forms of starchy foods.

4.1.10 Guideline 10: “Give your child milk, maas or yoghurt every day”

A new addition to the revised sets of paediatric and adult FBDGs includes a guideline encouraging the intake of milk, maas or yoghurt. The promotion of the intake of dairy products during childhood is essential as adults are more likely to drink milk if they established the habit at a young age.[136]

The addition of the words “full cream” was suggested by some participants from formal areas. Fat forms an integral part of the diet of infants and young children owing to the provision of essential fatty acids. It facilitates the absorption of fat-soluble vitamins, while increasing the energy density of the diet. The recommended intake for children is 30–45% total energy, which is sufficient in providing adequate amounts of essential fatty acids without the provision of excessive amounts of fat, resulting in childhood overweight and obesity.[49]

Participants in one FGD in a formal area discussed the exclusion of cheese from the guideline. It was suggested that cheese be added to the guideline promoting the intake of dairy products. The majority of cheeses are considered to be concentrated food sources and to avoid confusion, all cheeses were omitted from the adult and paediatric FBDGs as the focus is primarily on milk, maas and yoghurt and not all dairy products.[41] Cheddar cheese, for example, contains more than 6 times the amount of energy and

more than 10 times the amount of sodium per 100g compared to fresh full fat milk.[41]

The understanding among participants was that the guideline promotes the intake of dairy and calcium for children, which is in accordance with the literature summarised in Section 1.7.10. Supplementary material should emphasise the importance of full cream dairy products for children between the ages of 12–36 months, while providing information on the recommended serving sizes as well as dairy products containing added sugar.

4.1.11 Summary of the understanding and interpretation of the Paediatric Food-Based Dietary Guidelines

This study revealed that participants expressed a general understanding and interpretation of the core messages contained in the PFBDGs. Misinterpretation and confusion arose regarding certain PFBDGs, namely guidelines three, four, eight and nine. These aspects can however be addressed by adapting the terminology slightly and through the addition of supplementary material.

4.2 Previous exposure

Previous exposure to the PFBDGs was assessed and participants were asked to report the source of their information. A number of sources were reported by participants regarding where they had heard about or seen the PFBDGs or similar guidelines previously. Participants from both formal and informal areas reported magazines, books, pamphlets, friends, family, schools and crèches as sources of information. The most predominant sources of nutrition information listed by participants from informal areas were clinics, hospitals and nurses, while participants from formal areas reported the Internet and books. It was clear that participants from informal areas relied on primary health care services, such as those listed above, for dietary knowledge, while participants from formal areas relied mostly on private health care services in the form of paediatricians and private breastfeeding clinics. Targeting both public and private health care facilities is thus essential for the dissemination of the PFBDGs to individuals from formal and informal areas.

From the reported data, it was clear that the mass media were a common source of nutrition information amongst all of the participants in the form of the Internet, magazines, television and the radio. A similar study assessing the FBDGs also reported the media, particularly television and the radio, as being a primary source of information among participants.[96] Major sources of nutrition information among black urban South African women were identified in another study and reported similar results.[137] It was

found that 90% of the participants had received information regarding nutrition from at least one mass media source in the past year, with the most common sources being the radio, television and magazines. The perceived credibility of the sources of nutrition information was also assessed, with results indicating that more than 60% of participants trusted information from both the television and radio. Health professionals were listed by 91.1% of participants as being the most credible sources of nutrition information, despite only 48.5% having listed receiving nutrition information from them in the past year. Thus, in order to improve health and nutrition knowledge, the use of the mass media in delivering nutrition education should be advocated as most mass media sources are easily accessible and when linked with health professionals, could be perceived as a trusted source of information.[137] Studies on the complementary feeding practices in South Asia reported that factors such as poor maternal education and reduced antenatal care visits, as well as limited exposure to the media, resulted in inappropriate complementary feeding practices.[138–145] In Nepal, mothers who were exposed to media sources (television, radio, newspapers and magazines) at least once per week were more likely to provide a higher dietary diversity and meal frequency to their children than those with limited or no exposure.[142] These findings support the need for interventions aimed at improving complementary feeding practices and infant and young child health in countries with high burdens of malnutrition, to focus on promoting health through the mass media.[138]

The findings from this study suggested that participants were familiar with and recognised the majority of the concepts conveyed by the PFBDGs, although they had not necessarily been exposed to the exact terminology previously. The first and sixth PFBDG regarding breastfeeding and hand washing respectively, were the two guidelines that the participants reported receiving the most exposure to, while the last three PFBDGs relating to five small meals, starchy foods and dairy products, were those that the participants were not as familiar with. Exposure to health promotion messages and guidelines does, however, not directly influence one's ability to implement them. Although participants were familiar with the guidelines promoting breastfeeding and hand washing, their implementation proved to be difficult because of the presence of a number of challenges, as discussed in Section 4.1.1 and 4.1.6.

The communication of health promotion messages to the public can be a challenging and daunting task. Goldberg et al.[146] highlighted four challenges, namely the evolutionary nature of science, the various sources of communication, the agendas and motivations of the sources, and the multifaceted nature of consumers. Scientific information and dietary advice are constantly changing owing to the evolutionary nature of science. This results in consumers losing faith in the nutritional guidelines relayed to them. Different sources of information exist which result in consumers not

only receiving advice from experts in the field, but also from academic institutions, medical journals, the government, non-profit and advocacy organisations, the food and beverage industry, and the media, amongst others. These sources have conflicting agendas and motivations and may not be in line with the most recent scientific data. This could cause confusion among consumers and result in the mistrust of a number of sources of information.

In order for the PFBDGs to be implemented, they need to be effectively communicated to the public through well-known channels and credible sources. The FAO/WHO suggest the use of a variety of media sources to ensure that individuals of all ages from all communities are reached.[3] However, the challenges described by Goldberg et al. and those experienced by the public indicate that communicating health promotion messages alone will not elicit behaviour change.[2,146] Equipping the public with the knowledge and skills necessary to make decisions regarding their own health and diet is an essential step towards improving the health of adults and children and ensuring the implementation of the FBDGs.

4.3 Possible barriers to and enablers of the implementation of the Paediatric Food-Based Dietary Guidelines

A number of barriers to and enablers of the implementation of the PFBDGs exist. Cost and affordability, food accessibility and marketing were a few of the factors listed by participants in the study as influencing a family's ability to implement the PFBDGs. For the guidelines to have a significant effect on the health and feeding practices of infants and young children, the dominant barriers should be addressed while enablers are enhanced and improved.

4.3.1 Food insecurity

Financial constraints were described as one of the cardinal barriers to the implementation of the PFBDGs, with participants describing an inability to purchase all of the foods recommended in the guidelines, especially families with a low socio-economic status. In South Africa, food insecurity, poverty and hunger are endemic, with recent data indicating that 76.1% of South African adults earn less than R3 200 per month.[8] To further compound the problem, healthy foods are often more expensive and in some cases unaffordable. Temple et al.[147] compared the cost of a healthy diet with that of a typical South African diet. Six foods commonly consumed by South Africans, namely hamburger beef, full cream milk, Corn Flakes, brick margarine,

white rice and white bread, were replaced with healthier substitutes, such as lean hamburger beef, fat-free milk, bran flakes, margarine rich in polyunsaturated fats, brown rice and whole-wheat bread. Findings indicated that on average, a healthier diet costs 69% more.[147] It has also been reported that the cost of implementing the FBDGs is higher than what South Africans with a low socio-economic status can afford, even when reducing the amount of variety and animal products consumed.[148] Poorer families are often forced to consume starch-rich staple foods. When consumed in isolation, these diets are not adequate to meet nutritional needs, especially those of infants and young children.[148] Thus, based primarily on financial constraints, implementing and adhering to the FBDGs may be challenging for some families, while near impossible for others.

Lack of food availability and accessibility was another challenge discussed by participants. Limited access to supermarkets, where healthy foods may be purchased, is a common challenge faced by families living in rural communities or outside of town centres. They are often forced to travel long distances to visit a supermarket where a wide variety of healthy foods are available, or they have to pay high prices in small local stores where food availability is poor.[147]

The UNICEF programming guide for IYCF[149] highlights the importance of appropriate complementary feeding practices in both food-secure and food-insecure households. The guide suggests the following:[149]

- For households experiencing food security: Strategies should be aimed at improving infant feeding practices and enhancing micronutrient supplementation.
- For households experiencing food insecurity: The promotion of fortified staple foods and lipid-based nutrient supplements is recommended.

In South Africa, the release of the National Development Plan (NDP) in August 2012 showed strong commitment from the government to address poverty and inequality in the country.[150] By 2030, the government aims to (1) eliminate income poverty by reducing the number of households with an income of less than R419 per person per month from 39% to 0%, and (2) reduce inequality by reducing the Gini coefficient from 0.69 to 0.6.[150] Efforts to improve poverty and inequality in South Africa are vital. However, reducing abject poverty, while an essential government goal, does not guarantee food security. Thus, poverty, inequality and food insecurity need to be addressed through multiple strategies and programmes.

Furthermore, to meet the goals set out by the NDP, certain nutritional aspects were highlighted, such as to ensure household food and nutrition security as well as

to improve nutritional interventions aimed at pregnant women and children. Food and nutrition security were documented as being priorities in South Africa, with the National Planning Commission, who drafted the NDP, proposing the development of a food security roadmap.[150] Nutritional recommendations were also included in the document, such as encouraging working mothers, especially farm workers, to exclusively breastfeed their infants for six months, prioritising nutrition education among mothers, caregivers and health care workers, ensuring fortified products are available for all, and fortifying foods for children.[150] These recommendations and aims indicate that the nutritional status of children in the country is recognised to be of concern and that in order to address the fundamental issues in South Africa such as poverty and food insecurity, maternal and child health also need to be addressed and managed.

The NDP also highlights the importance of food grants, food fortification, pricing, education and food gardens in achieving food security. Promoting food gardens in public and private schools is an effective way of enhancing food security, while also providing children with a sense of responsibility.[151] Fresh fruit and vegetables rich in essential micronutrients can be grown and incorporated into school meals, thus ensuring optimal intake among young children.[151] Food stamps or grants can also be effective in addressing food insecurity by providing needy families with parcels containing healthy and fresh produce or stamps allowing individuals to purchase certain foods at a discounted price.

Together with the recent NDP, the government has made considerable efforts to improve food security, including the 2002 Integrated Food Security Strategy (IFSS) for South Africa which aimed at eradicating hunger, malnutrition and food insecurity.[152] In order for the country to see significant progress and improvements, both existing and newly introduced policies and strategies should be assessed and strengthened, and most importantly, monitored for appropriate implementation.

4.3.2 Time constraints

Time constraints were mentioned in this study, with participants reporting that cooking a healthy meal for themselves and their children required additional time and energy, which they often did not have after returning home from work in the evening. Although employment has positive effects on food security, research indicates that in families with working parents, the family diet was often negatively affected, especially through an increase in the intake of fast food or ready-made meals.[153] A study conducted in America reported that in families with mothers who were employed full time, family meals were less frequent, fast foods were consumed more often, and less time was spent on the preparation of food.[154] Therefore, while endeavouring to provide financially,

other challenges arise which could influence a family's ability to follow a healthy diet and implement the PFBDGs. In order to address this, nutrition education programmes should take time constraints into account when promoting nutritional guidelines.[153] Families should be assisted in making healthier choices when time is limited and parents should be educated on practical ways of implementing the PFBDGs. This could include recipes and tips for incorporating the foods highlighted in the PFBDGs into healthy meals that can be prepared quickly or ahead of time.

4.3.3 Food marketing and labelling

Another challenge affecting the implementation of a healthy diet includes the extreme marketing and often misleading labelling of food products. Participants explained how food marketers deceive consumers with false health claims or market foods by specifically targeting children. Research indicates that children are often exposed to unhealthy eating through food promotion and advertising. A review released by the WHO investigating the extent, nature and effects of food promotion on children reported television to be the main source of advertising for the marketing of products to children. The food items promoted to children are commonly high in fat, salt and sugar, and are highly processed. The "Big Five" is a term used to group together the food items advertised the most, namely sugary breakfast cereals, confectionery, savoury snacks, soft drinks and fast food. The review reported that the advertising of these unhealthy products often impacted on food preferences and a higher exposure to advertising most often resulted in more frequent, unhealthy snacking.[155]

In South Africa, progress has been made with regard to the labelling and marketing of food products, with the release of the regulations relating to foodstuffs for infants and young children (R991) in December 2012.[156] The scope of these regulations includes labelling, composition, packaging and manufacturing matters, as well as promotion-related aspects regarding the marketing of products such as infant formula; follow-up formula; infant or follow-up formula for special dietary or medical purposes; liquid milks, powdered milks, modified powdered milks, or powdered drinks marketed or otherwise represented as suitable for infants or young children; and feeding bottles, teats and feeding cups with spouts, straws or teats for infants and young children.[156] In 2014 the government published draft suggested amendments to the regulations relating to the labelling and advertising of foods for comment.[157,158] If gazetted these regulations will enforce more stringent requirements with regard to food labelling and include a section on the marketing of foods to children.[157,158]

Such regulations are a step in the right direction for the country, however their enforcement may prove to be challenging. Regular monitoring is thus essential to

ensure that young children are protected from misleading labelling claims.

Globally, efforts have been made to optimise IYCF practices and ensure the appropriate marketing of breast milk substitutes and complementary foods. The sixty-ninth World Health Assembly held in May 2016 provided guidance on ending the inappropriate promotion of foods for infants and young children, with the aim of promoting, protecting and supporting breastfeeding, preventing obesity and NCDs, promoting healthy diets, and ensuring that caregivers receive clear and accurate information on IYCF.[159] The report provided clarification on the International Code of Marketing of Breastmilk Substitutes and included guidance on any food "marketed as being suitable for infants and young children from the age of 6 months to 36 months". It highlighted seven key recommendations regarding product promotion, labelling and cross-promotion, amongst others.[159] Optimal enforcement of and compliance with this legislation are vital, together with the implementation of monitoring strategies to protect and support favourable IYCF practices.

4.3.4 Visual effects

Participants in the study expressed the need for illustrations and colourful visual effects accompanying the PFBDGs. It was noted that participants would not want to read a set of ten guidelines on a dull poster or pamphlet. A review investigating the effect of pictures on health communications reported that educational tools aimed at promoting health could be significantly more effective when accompanied by pictures.[160] Pictures and illustrations increased the chances of a tool being read and comprehension increased, especially when simple drawings and pictures were used.[160] Recalling health communications was easier and adherence was also increased with the use of pictures.[160] It was reported that pictures had an increased influence on individuals who were unable to read or had trouble reading, especially when used in combination with spoken information.[160] The authors recommended that when including pictures in educational material, efforts should be made to keep the pictures simple and the information clear and easy to understand.[160] In order to make the educational tools promoting the PFBDGs colourful and more appealing to the public, pictures should be used to illustrate the types of foods recommended for infants and young children, similar to those of the food guide developed for the adult FBDGs.

4.3.5 Education

Education was highlighted as an important facilitator to the implementation of the PFBDGs. Health education involves raising awareness about specific health problems, while encouraging behaviour change and equipping people with the skills necessary to

implement the change and make their own informed decisions regarding their health.[162] Participants in this study explained that educational programmes aimed at parents and caregivers would equip them with the knowledge to make healthy choices and also empower them to set good examples for their children. They also noted that although these programmes were important for parents/caregivers, health care professionals, communities and schools should also be targeted. This would ensure that the promotion of the PFBDGs is not only aimed at one target group, but rather reaches the whole population. Recommendations made by the recent SANHANES study outlined similar points, by urging programmes aimed at improving the nutritional status of children to be targeted at both school and community level.[8]

4.3.6 Summary of the barriers to and enablers of the implementation of the Paediatric Food-Based Dietary Guidelines

Implementing the PFBDGs may prove to be a difficult task for many South Africans, especially owing to high levels of food insecurity and poverty. Efforts to address these issues, as well as other common barriers, are necessary to ensure that the PFBDGs are a success. Enhancing the PFBDGs with the use of pictures and educating the public may also assist in ensuring that the guidelines form part of nutritional practices.

4.4 Study limitations

Limitations inherent to qualitative research methods were noted in this study. Due to the nature of the discussions, participants may have felt pressured to respond in a specific way or may not have shared their honest opinions for fear of being judged or socially isolated by fellow participants.[94,95] In an attempt to address this issue, the investigator noted non-verbal cues and reached out to participants who were quiet during discussions and less outgoing. When FGDs were dominated by one or two participants, the investigator made an effort to ask other participants for their opinions.

Researcher bias and subjectivity are common limitations found in qualitative research methods. To remain as objective as possible, the investigator followed the discussion schedule as closely as possible and allowed participants to discuss the questions as they pleased. The investigator also made a conscious effort not to ask leading questions.

Time constraints were another limitation noted in this study. Because all ten PFBDGs needed to be discussed, most of the FGDs continued for over an hour. Participants were often working mothers or teachers from local crèches, thus many of the FGDs

had to be conducted in the evening. The investigator noted that participants became aware of the time, which resulted in a few of the PFBDGs in the second half of a FGD not being as thoroughly discussed as the first half of PFBDGs. One FGD in a formal area was, however, stopped after two hours at the request of the facilitator, despite not all of the PFBDGs having been discussed.

Chapter 5

Conclusions and Recommendations

5.1 Conclusions

The nutritional status of children in South Africa remains a common concern, with stunting affecting one in four children.[8] This statistic alone emphasises the need for appropriate IYCF guidelines in the country. PFBDGs for South Africans were first developed in 2007 to address poor infant feeding practices but were never officially endorsed by the DoH. In 2011, a paediatric working group set out to revise the PFBDGs with the vision that the guidelines would be tested and subsequently adopted as an educational tool for improving the health of children under the age of five years.[2]

The purpose of this study was to test the recently revised PFBDGs by investigating their appropriateness and understanding among mothers/caregivers in the Stellenbosch municipal area. From the results, it was evident that the PFBDGs are appropriate and the core messages generally understood. However, for the PFBDGs to be implemented successfully and address and improve the nutritional status of children in South Africa, certain aspects need to be considered. Some of the PFBDGs require rewording or clarification, while others will not be implemented effectively without the inclusion of practical examples. Supplementary material is necessary to explain fundamental aspects including portion sizes as well as the overall importance of specific guidelines for child health. Furthermore, effectively disseminating the PFBDGs is essential in moving forward. The study indicated that exposure to infant feeding guidelines was high, with common sources of information being health care facilities and staff, as well as the media. Thus, the use of multiple media channels for the dissemination of the guidelines will be necessary, while also ensuring that health care professionals receive adequate training on the PFBDGs.

Only through addressing common barriers and making the necessary adaptations, will the PFBDGs be implemented effectively and thus have the intended outcome of improved IYCF practices.

5.2 Recommendations

5.2.1 General recommendations

- The results of this study should be shared with the national PFBDG working group to ensure that the guidelines are revised and appropriate for the general public. In order for the PFBDGs to be adopted as an educational tool for the improvement of IYCF practices in South Africa, they must be endorsed by the national DoH.
- Further field testing of the PFBDGs in different languages is required in the future. The guidelines should be promoted in all of the official South African languages to ensure that the entire population is reached.
- In order for the PFBDGs to be implemented appropriately, a holistic approach is necessary. Government departments (including the Departments of Health, Agriculture, Social Development, and Basic Education) should work together through the development and maintenance of policies aimed at improving the health and wellbeing of individuals and families in South Africa. Availability of human and financial resources should be ensured to promote the implementation of these policies. National attention should be placed on issues such as food insecurity and inadequate dietary diversity, while strengthening existing policies. Currently, individuals with a low socio-economic status and those living in rural communities are unable to afford a healthy diet which meets their nutritional requirements. Improving strategies and interventions aimed at reducing poverty and increasing the number of food-secure households in South Africa are crucial steps towards ensuring the PFBDGs are implemented.
- Ongoing monitoring of regulations relating to food fortification, salt reduction and labelling are necessary to ensure their optimal enforcement.
- Maternity and breastfeeding support should be strengthened by promoting South Africa as a breastfeeding-friendly society. The review of legislation regarding protecting and extending maternity leave in the Tshwane Declaration should be addressed.

- Efforts should be made by the Department of Education towards improving nutrition education in South Africa to raise awareness and improve dietary knowledge. Educational programmes promoting healthy eating and the intake of nutritionally adequate diets among children should be encouraged in crèches and schools. These programmes should also be focused on the development of skills as well as behaviour change.

- Feeding schemes and meals provided by crèches and schools should be based on the tested PFBDGs to ensure that children receive healthy meals while at school. Efforts should also be made to control the types of food sold and brought into these facilities.

- All national nutrition education materials and tools should be consistent with the tested PFBDGs. The infant feeding guidelines included in the RtHB should be updated to ensure that these messages conform to the PFBDGs.

- Training staff in contact with mothers and children in both private and public health care facilities on the most recent nutritional information will ensure that standardised messages are relayed to the public and conform to the core messages contained in the tested PFBDGs. Training programmes should not only focus on the provision of information to health care staff but should also aim at empowering and equipping them with the skills necessary to facilitate and encourage behaviour change among mothers and caregivers.

- The development and enhancement of community-based programmes aimed at enabling community workers to become activists for IYCF and health are recommended.

- Visual effects and illustrations are recommended to enhance the messages relayed by the PFBDGs. A paediatric food guide should be developed according to the PFBDGs which illustrates the various foods recommended for children. The guide should act as a supplementary tool and be used in combination with the PFBDGs.

- Supplementary material providing additional information, recommended portion sizes, practical examples and advice should be developed for each PFBDG and made available to all health care staff as well as the public in a format that is easy to understand.

- National awareness campaigns aimed at disseminating messages through a number of channels should be planned around the release of the tested PFBDGs. Private and public hospitals, clinics, crèches and schools should be targeted together with the use of mass media techniques to ensure optimal circulation of the PFBDGs.

- The use and implementation of the PFBDGs should be monitored and evaluated on a continuous basis through health indicators which will assess the effect of the guidelines on the health and nutritional status of children. IYCF indicators should also be monitored as a method of assessing the effect on infant feeding practices.

5.2.2 Recommendations regarding individual guidelines

Specific recommendations regarding each PFBDG are summarised below.

5.2.2.1 Guideline 1: "Continue to breastfeed to two years and beyond"

Supplementary material should address and include the following:

- Information on the importance of continued breastfeeding to two years and beyond
- Practical advice on expressing and the storage and handling of breast milk

5.2.2.2 Guideline 2: "Gradually increase the amount of food, number of feedings and variety as your child gets older"

Supplementary material should address and include the following:

- Information on the principles of responsive feeding
- Practical advice on increasing the variety of meals

5.2.2.3 Guideline 3: "Give your child meat, chicken, fish or egg every day, or as often as possible"

Misunderstandings should be addressed, such as the perception that all of the protein sources listed in the guideline should be consumed every day. Economical and plant-based protein sources such as legumes and peanut butter should be included in the guideline.

Supplementary material should address and include the following:

- Recommended portion sizes of protein for children

5.2.2.4 Guideline 4: "Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day"

Supplementary material should address and include the following:

- Why the focus of the guideline is on dark-green leafy vegetables and orange-coloured vegetables and fruit, rather than all vegetables and fruit, as well as the specific importance of these vegetables and fruit for children

- Recommended portion sizes and daily intake of fruit and vegetables
- Examples of dark-green leafy vegetables and orange-coloured vegetables and fruit
- Practical advice on methods of preparing and presenting dark-green leafy vegetables and orange-coloured vegetables to children

5.2.2.5 Guideline 5: "Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child"

Supplementary material should address and include the following:

- Clarity on why the guideline highlights the avoidance of tea
- General information and practical advice on how and when tea can be safely included in a child's diet
- Examples of sugary drinks and high-sugar, high-fat salty snacks that should be avoided
- Practical examples and advice on the intake of healthy snacks
- The importance of oral hygiene for the avoidance of dental caries

5.2.2.6 Guideline 6: "Hands should be washed with soap and clean water before preparing or eating food"

Supplementary material should address and include the following:

- Information on food hygiene and the safe preparation and storage of foods

5.2.2.7 Guideline 7: "Encourage your child to be active"

Supplementary material should address and include the following:

- Practical advice regarding the types of activities recommended for children
- Amount of activity recommended per day
- Information on the importance of daily activity as well as the avoidance of too much time spent in front of the television

5.2.2.8 Guideline 8: "Feed your child five small meals during the day"

In order to eliminate confusion around the word "meals", the eighth PFBDG should be reworded to "Feed your child at least three small meals and two snacks during the day".

Supplementary material should address and include the following:

- Practical advice regarding the implementation of three meals and two snacks
- Recommended portion sizes for each meal and snack

5.2.2.9 Guideline 9: "Make starchy foods part of most meals"

Supplementary material should address and include the following:

- Information on the common misconceptions regarding starchy foods and the importance thereof in a child's diet
- Recommended portion sizes of starchy foods for children
- Examples of healthy and unrefined starchy foods

5.2.2.10 Guideline 10: "Give your child milk, maas or yoghurt every day"

Supplementary material should address and include the following:

- Information on the importance of full cream dairy products for children
- Recommended portion sizes of dairy products per day
- Avoidance of dairy products high in sugar

5.3 Concluding statement

PFBDGs are standardised messages and can be used as one more educational tool for dietitians, nutritionists and other healthcare professionals to ensure that consistent messages are relayed to mothers/caregivers of infants and young children. It is hoped that this research will contribute to the adoption of the PFBDGs and influence the dietary behaviours and practices of many South Africans. If enforced and promoted optimally, the PFBDGs can be used for the benefit of the future nutritional health of our nation.

References

1. Department of Health. Roadmap for Nutrition in South Africa, 2013–2017. Pretoria, South Africa: Department of Health; 2013.

2. Vorster HH, Badham JB, Venter CS. An introduction to the revised food-based dietary guidelines for South Africa. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S5–S12.

3. Food and Agriculture Organization of the United Nations / World Health Organization. Preparation and use of food-based dietary guidelines. Report of a joint FAO/WHO Consultation. Technical Report Series No. 880; 1998. Geneva, World Health Organization.

4. Food and Agriculture Organization of the United Nations / International Fund for Agricultural Development / World Food Programme. The State of Food Insecurity in the World 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress; 2015. Rome, FAO.

5. Steyn NP, Temple N, editors. Community Nutrition Textbook for South Africa: A Rights-Based Approach. Chronic Diseases of Lifestyle Unit, South African Medical Research Council; 2008.

6. United Nations Children's Fund. Improving Child Nutrition: The achievable imperative for global progress; 2013. Available from: http://www.unicef.org/publications/index_68661.html.

7. Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, et al. Maternal and child undernutrition: global and regional exposures and health consequences. The Lancet. 2008;371(9608):243–260.

8. Shisana O, Labadarios D, Rehle T, Simbayi L, Zuma K, Dhansay A, et al. South African National Health and Nutrition Examination Survey (SANHANES-1). 2014;Cape Town: HSRC Press.

9. Labadarios D, Steyn NP, Maunder E, MacIntyre U, Swart R, Gericke G, et al. The National Food Consumption Survey (NFCS) - children aged 1-9 years, South Africa, 1999. South African Journal of Clinical Nutrition. 2001;14:62–75.

10. Labadarios D, Swart R, Maunder E, Kruger HS, Gericke G, Kuzwayo PMN, et al. Executive summary of the National Food Consumption Survey Fortification Baseline (NFCS-FB-I) South Africa, 2005. South African Journal of Clinical Nutrition. 2007;21(3)(suppl 2):245–300.

11. United Nations. The Millennium Development Goals Report; 2015. Available from: http://www.un.org/millenniumgoals/news.shtml.

12. United Nations. Transforming our world: The 2030 Agenda for Sustainable Development; 2015. Available from: http://www.un.org/sustainabledevelopment/development-agenda/.

13. United Nations. Sustainable Development Goals: Communications material [Online]; 2015. Available from: http://www.un.org/sustainabledevelopment/news/communications-material/.

14. United Nations Children's Fund. The state of the world's children. Oxford University Press; 1998. Available from: http://www.unicef.org/sowc98/.

15. United Nations Children's Fund. Strategy for improved nutrition of children and women in developing countries. A UNICEF policy review; 1992. Available from: http://www.ceecis.org/iodine/01_global/01_pl/01_01_other_1992_unicef.pdf.

16. Dorrington RE, Bradshaw D, Laubscher R, Nannan N. Rapid mortality surveillance report 2014; 2015. Cape Town: South African Medical Research Council.

17. World Health Organization. Children: reducing mortality. Fact Sheet No.178; Updated January 2016. Available from: http://www.who.int/mediacentre/factsheets/fs178/en/.

18. Victora CG, Adair L, Fall C, Hallal PC, Martorell R, Richter L, et al. Maternal and child undernutrition: consequences for adult health and human capital. The Lancet. 2008;371(9609):340–357.

19. Popkin BM. An overview on the nutrition transition and its health implications: the Bellagio meeting. Public Health Nutrition. 2002;5(1A):93–103.

20. Popkin BM. Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases. The American Journal of Clinical Nutrition. 2006;84:289–298.

21. World Health Organization. The World Health Report 2002: Reducing Risks, Promoting Healthy Life; 2002. Available from: http://www.who.int/whr/2002/en/.

22. Steyn NP, Bradshaw D, Norman R, Joubert JD, Schneider M, Steyn K. Dietary Changes and the Health Transition in South Africa: Implications for Health Policy; 2006. Cape Town: South African Medical Research Council.

23. Labadarios D, Middelkoop A. Anthropometric, vitamin A, iron and immunisation coverage status in children aged 6-71 months in South Africa, 1994. South African Vitamin A Consultative Group (SAVACG). South African Medical Journal. 1996;86(4):354–357.

24. World Health Organization. Landscape analysis on countries' readiness to accelerate action to reduce maternal and child undernutrition: Nationwide country assessment in South Africa; 2010. Geneva: World Health Organization. Available from: http://www.who.int/nutrition/landscape_analysis/SouthAfrica/en/.

25. Faber M, Wenhold F. Nutrition in contemporary South Africa. Water SA. 2007;33(3):393–400.

26. Jooste PL, Weight MJ, Lombard CJ. Iodine concentration in household salt in South Africa. Bulletin of the World Health Organization. 2001;79(6):534–540.

27. Charlton KE, Jooste PL, Steyn K, Levitt NS, Ghosh A. A lowered salt intake does not compromise iodine status in South Africa, a country with mandatory salt iodization. Nutrition. 2012;Available from: http://dx.doi.org/10.1016/j.nut.2012.09.010.

28. Republic of South Africa. Regulations relating to food-grade salt. R. 184 of the Foodstuffs, Cosmetics and Disinfectants Act; 2007. Government Gazette. No. 29670.

29. Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, Giugliani E, et al. What works? Interventions for maternal and child undernutrition and survival. The Lancet. 2008;371(9610):417–440.

30. World Health Organization / World Food Programme / United Nations Children's Fund. Preventing and controlling micronutrient deficiencies in populations affected by an emergency. Joint statement by the World Health Organization, the World Food Programme and the United Nations Children's Fund; 2007. Available from: http://www.who.int/nutrition/publications/emergencies/en/.

31. World Health Organization. Global prevalence of vitamin A deficiency in populations at risk 1995–2005. WHO Global Database on Vitamin A Deficiency; 2009. Geneva, World Health Organization.

32. Gibson RS. Principles of Nutritional Assessment. 2nd ed. Oxford University Press; 2005.

33. World Health Organization / Centers for Disease Control and Prevention. Worldwide prevalence of anaemia 1993–2005. WHO Global Database on Anaemia; 2008. Geneva, World Health Organization. Available from: http://www.who.int/nutrition/publications/micronutrients/anaemia_iron_deficiency/en/.

34. Department of Health. Infant and Young Child Feeding Policy. Pretoria, South Africa: Department of Health; 2013.

35. United Nations Children's Fund. Baby-friendly Hospital Initiative: revised, updated and expanded for integrated care; 2009. Available from: http://www.unicef.org/programme/breastfeeding/baby.htm.

36. Department of Health. The Tshwane declaration of support for breastfeeding in South Africa. South African Journal of Clinical Nutrition. 2011;24(4):214.

37. Food and Agriculture Organization of the United Nations / World Health Organization. World Declaration and Plan of Action for Nutrition. International Conference on Nutrition. Rome; 1992.

38. Vorster HH, Love P, Browne C. Development of Food-Based Dietary Guidelines for South Africa - The Process. South African Journal of Clinical Nutrition. 2001;14(3)(Supplement):S3–S6.

39. Vorster HH. Revised food-based dietary guidelines for South Africa: challenges pertaining to their testing, implementation and evaluation. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S3–S4.

40. Department of Health. Information for consumers: The South African Guidelines for Healthy Eating and Food Guide; 2012. Pretoria, South Africa: Department of Health.

41. Vorster HH, Wenhold FAM, Wright HH, Wentzel-Viljoen E, Venter CS, Vermaak M. "Have milk, maas or yoghurt every day": a food-based dietary guideline for South Africa. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S57–S65.

42. Bourne LT. South African paediatric food-based dietary guidelines. Maternal and Child Nutrition. 2007;3:227–229.

43. World Health Organization. Global Strategy for Infant and Young Child Feeding; 2003. Geneva, World Health Organization.

44. Naylor AJ, Morrow A. Developmental Readiness of Normal Full Term Infants to Progress from Exclusive Breastfeeding to the Introduction of Complementary Foods: Reviews of the Relevant Literature Concerning Infant Immunologic,

Gastrointestinal, Oral Motor and Maternal Reproductive and Lactational Development; 2001. Wellstart International and the LINKAGES Project/Academy for Educational Development, Washington, D.C.

45. Butte NF, Lopez-Alarcon MG, Garza C. Nutrient adequacy of exclusive breastfeeding for the term infant during the first six months of life; 2002. Geneva, World Health Organization.

46. Kramer MS, Kakuma R. The optimal duration of exclusive breastfeeding - A systematic review; 2002. Geneva, World Health Organization.

47. Chowdhury R, Sinha B, Sankar MJ, Taneja S, Bhandari N, Rollins N, et al. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. Acta Pædiatrica. 2015;104:96–113.

48. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. The Lancet. 2016;387:475–490.

49. World Health Organization. Guiding principles for complementary feeding of the breastfed child; 2001. Geneva, World Health Organization.

50. World Health Organization / United Nations Children's Fund. Complementary feeding of young children in developing countries: a review of current scientific knowledge; 1998. Geneva, World Health Organization.

51. Harder T, Bergmann R, Kallischnigg G, Plagemann A. Duration of Breastfeeding and Risk of Overweight: A Meta-Analysis. American Journal of Epidemiology. 2005;162(5):397–403.

52. Department of Health. South African Demographic and Health Survey; 2003. Pretoria, South Africa: Department of Health.

53. Meyer A, Van Der Spuy DA, Du Plessis LM. The rationale for adopting current international breastfeeding guidelines in South Africa. Maternal & Child Nutrition. 2007;3(4):271–280.

54. Department of Health. South African Demographic and Health Survey; 1998. Pretoria, South Africa: Department of Health.

55. Harbron J, Booley S, Najaar B, Day CE. Responsive feeding: establishing healthy eating behaviour early on in life. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S141–S149.

56. Northstone K, Emmett P, Nethersole F, the ALSPAC Study Team. The effect of age of introduction to lumpy solids on foods eaten and reported feeding difficulties at 6 and 15 months. Journal of Human Nutrition and Dietetics. 2001;14:43–54.

57. Agostoni C, Decsi T, Fewtrell M, Goulet O, Kolacek S, Koletzko B, et al. Complementary Feeding: A Commentary by the ESPGHAN Committee on Nutrition. Journal of Pediatric Gastroenterology and Nutrition. 2008;46:99–110.

58. Murphy SP, Allen LH. Nutritional Importance of Animal Source Foods. The Journal of Nutrition. 2003;133:3932S–3935S.

59. Allen LH, Gillespie SR. What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions; 2001. United Nations Administrative Committee on Coordination / Sub-Committee on Nutrition (ACC/SCN) in collaboration with the Asian Development Bank (ADB).

60. Du Plessis LM, Kruger HS, Sweet L. Complementary feeding: a critical window of opportunity from six months onwards. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S129–S140.

61. World Health Organization. Fruit and Vegetable Promotion Initiative - report of the meeting, Geneva, 25-27 August 2003; 2003. Geneva, World Health Organization.

62. Bowley NA, Pentz-Kluyts MA, Bourne LT, Marino LV. Feeding the 1 to 7-year-old child. A support paper for the South African paediatric food-based dietary guidelines. Maternal and Child Nutrition. 2007;3:281–291.

63. Naude CE. "Eat plenty of vegetables and fruit every day": a food-based dietary guideline for South Africa. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S46–S56.

64. Naude CE. Fruit and vegetable consumption by South African children, aged 12 to 108 months: a secondary analysis of the National Food Consumption Survey data. Stellenbosch: Stellenbosch University; 2007.

65. Naude CE. Would an increase in vegetable and fruit intake help to reduce the burden of nutrition-related disease in South Africa? An umbrella review of the evidence. South African Journal of Clinical Nutrition. 2013;26(3):104–114.

66. Faber M, van Jaarsveld PJ, Laubscher R. The contribution of dark-green leafy vegetables to total micronutrient intake of two- to five-year-old children in a rural setting. Water SA. 2007;33(3):407–412.

67. Faber M, Phungula MAS, Venter SL, Dhansay MA, Benadé AJS. Home gardens focusing on the production of yellow and dark-green leafy vegetables increase the

serum retinol concentrations of 2-5-y-old children in South Africa. The American Journal of Clinical Nutrition. 2002;76:1048–1054.

68. Allen LH, Ahluwalia N. Improving Iron Status Through Diet. The Application of Knowledge Concerning Dietary Iron Bioavailability in Human Populations; 1997. John Snow, Inc. / OMNI Project.

69. Moynihan P, Petersen PE. Diet, nutrition and the prevention of dental diseases. Public Health Nutrition. 2004;7(1A):201–226.

70. Tinanoff N, Palmer CA. Dietary Determinants of Dental Caries and Dietary Recommendations for Preschool Children. Journal of Public Health Dentistry. 2000;60(3):197–206.

71. Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: a systematic review. The American Journal of Clinical Nutrition. 2006;84:274–288.

72. Marshall TA, Levy SM, Broffitt B, Warren JJ, Eichenberger-Gilmore JM, Burns TL, et al. Dental Caries and Beverage Consumption in Young Children. Pediatrics. 2003;112(3):e184–e191.

73. American Academy of Pediatrics. The Use and Misuse of Fruit Juice in Pediatrics. Pediatrics. 2001;107(5):1210–1213.

74. Maunder EMW, Nel JH, Steyn NP, Kruger HS, Labadarios D. Added Sugar, Macro- and Micronutrient Intakes and Anthropometry of Children in a Developing World Context. PLoS ONE. 2015;10(11):1–24.

75. Jimenez-Cruz A, Bacardi-Gascon M, Pichardo-Osuna A, Mandujano-Trujillo Z, Castillo-Ruiz O. Infant and toddlers' feeding practices and obesity amongst low-income families in Mexico. Asia Pacific Journal of Clinical Nutrition. 2010;19(3):316–323.

76. Faber M, Benadé AJS. Breastfeeding, complementary feeding and nutritional status of 6-12 month-old infants in rural KwaZulu-Natal. South African Journal of Clinical Nutrition. 2007;20(1):16–24.

77. Curtis V, Cairncross S. Effect of washing hands with soap on diarrhoea risk in the community: a systematic review. The Lancet Infectious Diseases. 2003;3:275–281.

78. Fewtrell L, Kaufmann RB, Kay D, Enanoria W, Haller L, Colford Jr JM. Water, sanitation, and hygiene interventions to reduce diarrhoea in less developed countries: a systematic review and meta-analysis. The Lancet Infectious Diseases. 2005;5:42–52.

79. Burton M, Cobb E, Donachie P, Judah G, Curtis V, Schmidt W. The Effect of Handwashing with Water or Soap on Bacterial Contamination of Hands. International Journal of Environmental Research and Public Health. 2011;8:97–104.

80. World Health Organization. Global recommendations on physical activity for health; 2010. Geneva, World Health Organization.

81. Janssen I, LeBlanc AG. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. International Journal of Behavioral Nutrition and Physical Activity. 2010;7(40):1–16.

82. Trawick-Smith J. The Physical Play and Motor Development of Young Children: A Review of Literature and Implications for Practice. Center for Early Childhood Education Eastern Connecticut State University; 2014. Available from: http://www1.easternct.edu/cece/files/2014/06/BenefitsOfPlay_LitReview.pdf.

83. American Academy of Pediatrics, Committee on Nutrition. Prevention of Pediatric Overweight and Obesity. Pediatrics. 2003;112(2):424–430.

84. Botha CR, Wright HH, Moss SJ, Kolbe-Alexander TL. "Be active!" Revisiting the South African food-based dietary guideline for activity. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S18–S27.

85. National Association for Sport and Physical Education (NASPE). Active Start: A Statement of Physical Activity Guidelines for Children Birth to Five Years; 2006. Available from: http://www.shapeamerica.org/standards/guidelines/activestart.cfm.

86. Vorster HH. "Make starchy foods part of most meals": a food-based dietary guideline for South Africa. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S28–S35.

87. Food and Agriculture Organisation of the United Nations. Carbohydrates in human nutrition. Report of a Joint FAO/WHO Expert Consultation; 1998. Rome, Italy.

88. Aggett PJ, Agostoni C, Axelsson I, Edwards CA, Goulet O, Hernell O, et al. Nondigestible Carbohydrates in the Diets of Infants and Young Children: A Commentary by the ESPGHAN Committee on Nutrition. Journal of Pediatric Gastroenterology and Nutrition. 2003;36(3):329–337.

89. Scientific Advisory Committee on Nutrition (SACN). Carbohydrates and Health; 2015. London: TSO.

90. Dwyer JT. Dietary Fiber for Children: How Much? Pediatrics. 1995;96(5):1019–1022.

91. Dror DK, Allen LH. The importance of milk and other animal-source foods for children in low-income countries. Food and Nutrition Bulletin. 2011;32(3):227–243.

92. Kalkwarf HJ, Khoury JC, Lanphear BP. Milk intake during childhood and adolescence, adult bone density, and osteoporotic fractures in US women. The American Journal of Clinical Nutrition. 2003;77:257–265.

93. Statistics South Africa. 2011 Census; 2012. Pretoria, Statistics South Africa. Available from: http://www.statssa.gov.za.

94. Skinner D. Qualitative methodology: an introduction. In: Epidemiology: A Research Manual for South Africa. 2nd ed. Oxford University Press Southern Africa; 2007. p. 318–327.

95. Dawson S, Manderson L, Tallo VL. A manual for the use of focus groups. Methods for social research in disease; 1993. Boston, USA: International Nutrition Foundation for Developing Countries (INFDC).

96. Love PV. Developing and assessing the appropriateness of the preliminary food-based dietary guidelines for South Africans. Pietermaritzburg: University of Natal; 2002.

97. Thornton L. Breastfeeding in South Africa: Social and Cultural Aspects and Strategies for Promotion. Curationis. 1984;7(3):33–41.

98. Rollins NC, Bhandari N, Hajeebhoy N, Horton S, Lutter CK, Martines JC, et al. Why invest, and what it will take to improve breastfeeding practices? The Lancet. 2016;387:491–504.

99. Smith JP, McIntyre B, Craig L, Javanparast S, Strazdins L, Mortensen K. Workplace support, breastfeeding and health. Family Matters. 2013;93:58–73.

100. World Alliance for Breastfeeding Action. Breastfeeding and the Workplace; 2008. Available from: http://www.waba.org.my/whatwedo/womenandwork/pdf/bf-workplace.pdf.

101. International Labour Organization. Maternity and paternity at work: Law and practice across the world; 2014. Geneva: International Labour Organization.

102. International Labour Organization. C183 Maternity Protection Convention, 2000 (No. 183): Convention concerning the revision of the Maternity Protection Convention (Revised); 2000. Geneva, ILO. Available from: www.ilo.org/ilolex/cgi-lex/convde.pl?C183.

103. International Labour Organization. R191 Maternity Protection Recommendation, 2000 (No. 191): Recommendation concerning the revision of the Maternity Protection Recommendation, 1952; 2000. Geneva, ILO. Available from: http://www.ilo.org/dyn/normlex/en/f?p=1000:12010:0::NO:::.

104. Republic of South Africa. Basic Conditions of Employment Act; 1997. Government Gazette. Vol. 390, No. 18491.

105. Republic of South Africa. Code of Good Practice on the Protection of Employees during Pregnancy and after the Birth of a Child. R. 1441 of the Basic Conditions of Employment Act; 1998. Government Gazette. Vol. 401, No. 19453.

106. Li R, Hsia J, Fridinger F, Hussain A, Benton-Davis S, Grummer-Strawn L. Public Beliefs about Breastfeeding Policies in Various Settings. Journal of the American Dietetic Association. 2004;104:1162–1168.

107. Acker M. Breast is Best . . . But Not Everywhere: Ambivalent Sexism and Attitudes Toward Private and Public Breastfeeding. Sex Roles. 2009;61:476–490.

108. Britton C, McCormick FM, Renfrew MJ, Wade A, King SE. Support for breastfeeding mothers. Cochrane Database of Systematic Reviews. 2007;1. CD001141.

109. Centers for Disease Control and Prevention. Strategies to Prevent Obesity and Other Chronic Diseases: The CDC Guide to Strategies to Support Breastfeeding Mothers and Babies; 2013. Atlanta: U.S. Department of Health and Human Services.

110. Ahluwalia IB, Morrow B, Hsia J. Why Do Women Stop Breastfeeding? Findings From the Pregnancy Risk Assessment and Monitoring System. Pediatrics. 2005;116:1408–1412.

111. United Nations Children's Fund. Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding; 1990. Available from: http://www.unicef.org/programme/breastfeeding/innocenti.htm.

112. World Health Organization. The optimal duration of exclusive breastfeeding. Report of an expert consultation; 2001. Geneva: World Health Organization. Available from: http://apps.who.int/iris/bitstream/10665/67219/1/WHO_NHD_01.09.pdf.

113. Steyn NP, Nel JH, Nantel G, Kennedy G, Labadarios D. Food variety and dietary diversity scores in children: are they good indicators of dietary adequacy? Public Health Nutrition. 2006;9(5):644–650.

114. Babajee LC, Burn KJ, Greener CM, Kleingeld B, Loftus M, Ronquest C, et al. Field-testing of the revised Paediatric Food-Based Dietary Guidelines amongst mothers/caregivers of children aged 0-12 months in the Western Cape Province, South Africa (Conference poster); 2015. Division of Human Nutrition, Faculty of Medicine and Health Sciences, Stellenbosch University.

115. National Agricultural Marketing Council. Markets and Economic Research Centre. Food Price Monitor: Issue 2015/February; 2015. Available from: http://www.namc.co.za/upload/food_price_monitoring/NAMC%20--Food%20Price%20Monitor-February-%202015.pdf.

116. Venter CS, Vorster HH, Ochse R, Swart R. "Eat dry beans, split peas, lentils and soya regularly": a food-based dietary guideline. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S36–S45.

117. Schonfeldt HC, Pretorius B, Hall N. "Fish, chicken, lean meat and eggs can be eaten daily": a food-based dietary guideline for South Africa. South African Journal of Clinical Nutrition. 2013;26(3)(Supplement):S66–S76.

118. Republic of South Africa. Regulations relating to the reduction of sodium in certain foodstuffs and related matters. R. 214 of the Foodstuffs, Cosmetics and Disinfectants Act; 2013. Government Gazette. No. 36274.

119. Statistics South Africa. Consumer Price Index 2015; 2015. Statistical release P0141. Pretoria: Statistics South Africa.

120. Annique Day Spa [Online]. Dr. Annique Theron and her Rooibos Story; 2014. Available from: http://www.anniquedayspa.co.za/dr-annique-theron-rooibos-story/.

121. Joubert E, Gelderblom WCA, Louw A, de Beer D. South African herbal teas: Aspalathus linearis, Cyclopia spp. and Athrixia phylicoides - A review. Journal of Ethnopharmacology. 2008;119:376–412.

122. Marnewick JL, Gelderblom WCA, Joubert E. An investigation on the antimutagenic properties of South African herbal teas. Mutation Research. 2000;471:157–166.

123. Boulton J, Hashem KM, Jenner KH, Lloyd-Williams F, Bromley H, Capewell S. How much sugar is hidden in drinks marketed to children? A survey of fruit juices, juice drinks and smoothies. BMJ Open. 2016;6:1–5. E010330.

124. World Health Organization / United Nations Children's Fund / United States Agency International Development. Improving nutrition outcomes with better water, sanitation and hygiene: practical solutions for policies and programmes; 2015. Geneva: World Health Organization. Available from: http://www.who.int/water_sanitation_health/publications/washandnutrition/en/.

125. Rah JH, Cronin AA, Badgaiyan B, Aguayo VM, Coates S, Ahmed S. Household sanitation and personal hygiene practices are associated with child stunting in rural India: a cross-sectional analysis of surveys. BMJ Open. 2015;5. E005180.

126. Statistics South Africa. General Household Survey 2015; 2016. Statistical release P0318. Pretoria: Statistics South Africa.

127. van der Merwe J. A qualitative assessment of the preliminary food-based dietary guidelines for infants 6-12 months of age in the greater Oudtshoorn area. Stellenbosch: Stellenbosch University; 2004.

128. Pretorius A. An assessment of the comprehension of the preliminary 2007 version of the South African paediatric food-based dietary guidelines for Northern Sotho infants 6-12 months of age in Soshanguve and Ga-Rankuwa. Stellenbosch: Stellenbosch University; 2015.

129. Republic of South Africa. Regulations relating to the fortification of certain foodstuffs. R. 504 of the Foodstuffs, Cosmetics and Disinfectants Act; 2003. Government Gazette. Vol. 454, No. 24715.

130. Steyn NP, Nel JH, Labadarios D. Will fortification of staple foods make a difference to the dietary intake of South African children? South African Journal of Clinical Nutrition. 2008;21(1):22–26.

131. Pretorius B, Schönfeldt HC. Vitamin A content of fortified maize meal and porridge as purchased and consumed in South Africa. Food Research International. 2012;47(2):128–133.

132. Yusufali R, Sunley N, de Hoop M, Panagides D. Flour fortification in South Africa: Post-implementation survey of micronutrient levels at point of retail. Food and Nutrition Bulletin. 2012;33(4):S321–S329.

133. Noakes T, Creed S, Proudfoot J, Grier D. The Real Meal Revolution. Changing the world, one meal at a time. Quivertree Publications; 2013.

134. Noakes T, Proudfoot J, Surtees B. The Real Meal Revolution. Raising Superheroes. Real Meal Revolution (Pty) Ltd; 2015.

135. Association for Dietetics South Africa. Raising Superheroes - book review; 2015. Available from: https://nutritionconfidence.wordpress.com/2015/09/22/raising-superheroes-book-review/.

136. Caroli A, Poli A, Ricotta D, Banfi G, Cocchi D. Invited review: Dairy intake and bone health: A viewpoint from the state of the art. Journal of Dairy Science. 2011;94(11):5249–5262.

137. Charlton KE, Brewitt P, Bourne LT. Sources and credibility of nutrition information among black urban South African women, with a focus on messages related to obesity. Public Health Nutrition. 2004;7(6):801–811.

138. Menon P. The crisis of poor complementary feeding in South Asia: where next? (Editorial). Maternal and Child Nutrition. 2012;8 (Suppl. 1):1–4.

139. Senarath U, Dibley MJ. Complementary feeding practices in South Asia: analyses of recent national survey data by the South Asia Infant Feeding Research Network. Maternal and Child Nutrition. 2012;8 (Suppl. 1):5–10.

140. Kabir I, Khanam M, Agho KE, Mihrshahi S, Dibley MJ, Roy SK. Determinants of inappropriate complementary feeding practices in infant and young children in Bangladesh: secondary data analysis of Demographic Health Survey 2007. Maternal and Child Nutrition. 2012;8 (Suppl. 1):11–27.

141. Patel A, Pusdekar Y, Badhoniya N, Borkar J, Agho KE, Dibley MJ. Determinants of inappropriate complementary feeding practices in young children in India: secondary analysis of National Family Health Survey 2005-2006. Maternal and Child Nutrition. 2012;8 (Suppl. 1):28–44.

142. Joshi N, Agho KE, Dibley MJ, Senarath U, Tiwari K. Determinants of inappropriate complementary feeding practices in young children in Nepal: secondary data analysis of Demographic and Health Survey 2006. Maternal and Child Nutrition. 2012;8 (Suppl. 1):45–59.

143. Senarath U, Godakandage SSP, Jayawickrama H, Siriwardena I, Dibley MJ. Determinants of inappropriate complementary feeding practices in young children in Sri Lanka: secondary data analysis of Demographic and Health Survey 2006-2007. Maternal and Child Nutrition. 2012;8 (Suppl. 1):60–77.

144. Hazir T, Senarath U, Agho KE, Akram DS, Kazmi N, Abbasi S, et al. Determinants of inappropriate timing of introducing solid, semi-solid or soft food to infants in Pakistan: Secondary data analysis of Demographic and Health Survey 2006-2007. Maternal and Child Nutrition. 2012;8 (Suppl. 1):78–88.

145. Senarath U, Agho KE, Akram DS, Godakandage SSP, Hazir T, Jayawickrama H, et al. Comparisons of complementary feeding indicators and associated factors in children aged 6-23 months across five South Asian countries. Maternal and Child Nutrition. 2012;8 (Suppl. 1):89–106.

146. Goldberg JP, Sliwa SA. Getting balanced nutrition messages across. Communicating actionable nutrition messages: challenges and opportunities. Proceedings of the Nutrition Society. 2011;70:26–37.

147. Temple NJ, Steyn NP. The cost of a healthy diet: A South African perspective. Nutrition. 2011;27:505–508.

148. Schönfeldt HC, Hall N, Bester M. Relevance of food-based dietary guidelines to food and nutrition security: A South African perspective. Nutrition Bulletin. 2013;38:226–235.

149. United Nations Children's Fund. Programming Guide: Infant and Young Child Feeding; 2011. UNICEF New York. Available from: http://www.unicef.org/nutrition/files/Final_IYCF_programming_guide_2011.pdf.

150. Office of the Presidency, South Africa: National Planning Commission. National Development Plan 2030: Our future - make it work; 2012. Pretoria: National Planning Commission. Available from: http://www.gov.za/issues/national-development-plan-2030.

151. Food and Agriculture Organization of the United Nations. A new deal for school gardens; 2010. Available from: http://www.fao.org/docrep/013/i1689e/i1689e00.pdf.

152. Republic of South Africa: Department of Agriculture. The Integrated Food Security Strategy for South Africa; 2002. Available from: http://faolex.fao.org/docs/pdf/saf149624.pdf.

153. Jabs J, Devine CM. Time scarcity and food choices: An overview. Appetite. 2006;47:196–204.

154. Bauer KW, Hearst MO, Escoto K, Berge JM, Neumark-Sztainer D. Parental employment and work-family stress: Associations with family food environments. Social Science & Medicine. 2012;75:496–504.

155. Hastings G, McDermott L, Angus K, Stead M, Thomson S. The extent, nature and effects of food promotion to children: a review of the evidence. Technical paper prepared for the World Health Organization; 2006. Geneva, World Health Organization.

156. Republic of South Africa. Regulations relating to foodstuffs for infants and young children. R. 991 of the Foodstuffs, Cosmetics and Disinfectants Act; 2012. Government Gazette. No. 35941.

157. Republic of South Africa. Regulations relating to the labelling and advertising of food: amendment. R. 426 of the Foodstuffs, Cosmetics and Disinfectants Act; 2014. Government Gazette. Vol. 587, No. 37695.

158. Republic of South Africa. Draft Guidelines: Regulations relating to the labelling and advertising of food: amendment. R. 426; 2014. Pretoria, South Africa: Department of Health.

159. World Health Organization / World Health Assembly. Sixty-ninth World Health Assembly. Guidance on ending the inappropriate promotion of foods for infants and young children; 2016. Geneva: World Health Organization. Available from: http://apps.who.int/gb/ebwha/pdf_files/WHA69/A69_7Add1-en.pdf.

160. Houts PS, Doak CC, Doak LG, Loscalzo MJ. The role of pictures in improving health communication: A review of research on attention, comprehension, recall, and adherence. Patient Education and Counseling. 2006;61:173–190.

161. Henney NM / Western Cape Government Department of Health. Breastfeeding Seminar: Mother and Baby Friendly Initiative; 2013. Available from: https://www.westerncape.gov.za/assets/departments/health/mbfi_08_august_2013_final.pdf.

162. Naidoo J, Wills J. Defining health promotion. In: Foundations for Health Promotion. 3rd ed. Elsevier; 2009. p. 51–66.

ADDENDUM A: HOUSEHOLD RECRUITMENT FORM

HOUSEHOLD RECRUITMENT FORM

Code: HRE_____

Good morning / Good afternoon

We are looking for volunteers over the age of 18 years for a research project who are mothers/caregivers of children between the ages of 12-36 months. Is there such a person in this household?

☐ ***No*** – Thank you for your time. Have a lovely day.

☐ ***Yes*** – May I speak to her please?

☐ ***Not at home*** – When will she be back? ……

We are conducting a study to determine the appropriateness and understanding of the new Paediatric Food-Based Dietary Guidelines amongst mothers/caregivers of children aged 12-36 months. In order to gain this information, we will be having group discussions with mothers/caregivers. You will be expected to discuss and share opinions on certain questions with the other group members. The discussions will be approximately 60-90 minutes long and audio recordings will be taken. All information will be kept confidential. Refreshments will be served and you will be given a parcel of healthy snacks as a token of appreciation.

Are you interested in taking part in one of these group discussions?

☐ ***No*** – Thank you for your time. Have a lovely day.

☐ ***Yes***

Do you have any formal training in nutrition?

☐ ***Yes*** – Thank you for your time. Unfortunately, any formal training in nutrition excludes you from the study. Have a lovely day.

☐ ***No***

Are you a permanent resident of this area?

☐ ***No*** - Thank you for your time. Unfortunately, that excludes you from the study. Have a lovely day.

☐ ***Yes*** – What time and day of the week suits you best for the discussions?

Details of participant:

Name: _____

Telephone number: _____

Address: _____

_____

_____

Area: _____

Completed by: _____

ADDENDUM B: COMMUNITY RECRUITMENT FORM

COMMUNITY RECRUITMENT FORM

Code: CRE_____

Good morning / Good afternoon

We are looking for volunteers over the age of 18 years for a research project who are mothers/caregivers of children between the ages of 12-36 months. Are you such a person?

No – Thank you for your time. Have a lovely day.

Yes

We are conducting a study to determine the appropriateness and understanding of the new Paediatric Food-Based Dietary Guidelines amongst mothers/caregivers of children aged 12-36 months. In order to gain this information, we will be having group discussions with mothers/caregivers. You will be expected to discuss and share opinions on certain questions with the other group members. The discussions will be approximately 60-90 minutes long and audio recordings will be taken. All information will be kept confidential. Refreshments will be served and you will be given a parcel of healthy snacks as a token of appreciation.

Are you interested in taking part in one of these group discussions?

☐ ***No*** – Thank you for your time. Have a lovely day.

☐ ***Yes***

Do you have any formal training in nutrition?

☐ ***Yes*** – Thank you for your time. Unfortunately, any formal training in nutrition excludes you from the study. Have a lovely day.

☐ ***No***

Are you a permanent resident of this area?

☐ ***No*** - Thank you for your time. Unfortunately, that excludes you from the study. Have a lovely day.

☐ ***Yes*** – What time and day of the week suits you best for the discussions?

_____

Details of participant:

Name: _____

Telephone number: _____

Address: _____

_____

_____

Area: _____

Permanently

Completed by: _____

SELF ADMINISTERED QUESTIONNAIRE FOR CAREGIVERS

Code: CGE_____

INSTRUCTIONS:

a) Please answer all of the questions.
b) Please complete the questionnaire below by ticking the appropriate box, circling the most appropriate number or writing the answer in the space provided.

Suburb: _____

Date (dd/mm/yyyy): _____

DEMOGRAPHIC INFORMATION:

1) Date of Birth (dd/mm/yyyy): _____

2) Ethnicity: ☐ White ☐ Coloured ☐ Asian
☐ Black ☐ Indian ☐ Other _____

3) Home language:
☐ English
☐ Afrikaans
☐ isiXhosa

4) Highest level of education:
☐ None
☐ Grade 1 – Grade 7
☐ Grade 8 – Grade 11
☐ Matric
☐ Tertiary education

5) Employment status:
☐ Employed
☐ Unemployed

6) Relation to child:
☐ Mother
☐ Sibling
☐ Grandmother
☐ Aunt
☐ Other (specify): _____

ADDENDUM D: TRANSLATED PAEDIATRIC FOOD-BASED DIETARY GUIDELINES

ENGLISH	AFRIKAANS	XHOSA
1. Continue to breastfeed to two years and beyond	1. Gaan voort om te borsvoed tot twee jaar en later	1. Qhubeka uncancisa ude uyokufika kwiminyaka emibini nangaphezulu
2. Gradually increase the amount of food, number of feedings and variety as your child gets older	2. Vermeerder die hoeveelheid kos, aantal voedings en verskeidenheid geleidelik, soos jou kind ouer word	2. Yenyusa kancinci ubungakanani bokutya, inani lamaxesha okutyisa kwakunye nokwahlukana kokutya ngokuye ekhula umntwana wakho
3. Give your child meat, chicken, fish or egg every day, or as often as possible	3. Gee jou kind vleis, hoender, vis of eier elke dag, of so gereeld as moontlik	3. Nika umntwana wakho inyama, inyama yenkukhu, intlanzi okanye amaqanda yonke imihla, okanye rhoqo kangangoko unako
4. Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day	4. Gee jou kind donkergroen blaargroente en oranje-kleurige groente en vrugte elke dag	4. Nika umntwana wakho imifuno eluhlaza enamagqabi nenombala o-orenji kunye neziqhamo yonke imihla
5. Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child	5. Vermy die gee van tee, koffie en soet drankies en hoë-suiker, hoë-vet sout peuselhappies aan jou kind	5. Kulumkele ukunika umntwana wakho iti, ikofu neziselo ezineswekile kunye namashwamshwam aneswekile eninzi kunye namafutha netyuwa
6. Hands should be washed with soap and clean water before preparing or eating food	6. Hande moet met seep en skoon water gewas word voordat voedsel voorberei of geëet word	6. Izandla kufanele zihlanjwe ngesephu namanzi acocekileyo ngaphambi kokulungisa ukutya okanye ngaphambi ukutya
7. Encourage your child to be active	7. Moedig jou kind aan om aktief te wees	7. Khuthaza umntwana wakho ukuba ashukumise umzimba
8. Feed your child five small meals during the day	8. Voer jou kind vyf klein maaltye gedurende die dag	8. Tyisa umntwana wakho izidlo ezincinci ezihlanu emini
9. Make starchy foods part of most meals	9. Maak styselkosse deel van meeste maaltye	9. Yenza ukutya okunestatshi kube yinxalenye yezidlo ezininzi
10. Give your child milk, maas or yoghurt every day	10. Gee jou kind melk, maas of joghurt elke dag	10. Nika umntwana wakho ubisi, amasi okanye iyogathi yonke imihla

PAEDIATRIC FOOD-BASED DIETARY GUIDELINES FOR CHILDREN AGED 12-36 MONTHS

1) Continue to breastfeed to two years and beyond.
2) Gradually increase the amount of food, number of feedings and variety as your child gets older.
3) Give your child meat, chicken, fish or egg every day, or as often as possible.
4) Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day.
5) Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child.
6) Hands should be washed with soap and clean water before preparing or eating food.
7) Encourage your child to be active.
8) Feed your child five small meals during the day.
9) Make starchy foods part of most meals.
10) Give your child milk, maas or yoghurt every day.

ADDENDUM F: FOCUS GROUP DISCUSSION SCHEDULE

FOCUS GROUP DISCUSSION SESSION OUTLINE

Welcome

Greet the participants and introduce yourself and the observers.
Thank the participants for their participation in this discussion.

Explanation of study

I will be asking you a number of questions about food-related guidelines for children. I will be doing this in order to gain information regarding how you feel about the guidelines and how well you understand them.
It shouldn't take too long (about 60-90 minutes). We will have a break in the middle of the session for refreshments.

Points to remember

- Please voice your opinions – whether positive or negative (there are no right or wrong answers).
- One person speaks at a time.
- No interrupting – let the person finish before stating your own opinion.
- There will be an audio recorder during the session – please ignore it. I will not be able to remember everything that is said here today so I will use the recording to analyse everything at a later stage. I will erase the recording once I have analysed the information.
- All of you have numbers placed on your shirts. This is how you will be identified – your names will not be used.

Informed consent

Before we can start, you need to provide informed consent. I will explain the procedure and then you will be required to sign the forms. Participation in this study is voluntary so it is up to you whether or not you would like to participate in today's session. Bear in mind that you may withdraw at any time if you feel the need to do so.

Facilitator:
**hand out informed consent forms to participants*
**read the form to the participants*
**facilitate filling in of forms*
**assist any illiterate participants*
**collect all informed consent forms and check for completeness*

Socio-demographic questionnaire

I will need background information from all of you regarding your age, gender and socio-economic status. I will read through the questionnaire with you. Once I have read each question, you must tick the appropriate box or write down your answer.

Facilitator:
**hand out socio-demographic questionnaires to participants*
**read the form to the participants*
**facilitate filling in of forms*
**assist any illiterate participants*
**collect all socio-demographic questionnaires and check for completeness*

Ice-Breaker

Before we start, I would like everyone to introduce themselves and tell us something about yourself.

Discussion

We will now start with the discussion. (**switch recorder on*)

Observers:
Take note of and write down the following information about the group:
**dynamics of the group*
**body language and facial expressions when hearing a guideline or question*
**group agreement or disagreement regarding a question/answer*

12-36 MONTHS

1) **Continue to breastfeed to two years and beyond**
   - Have you heard about or seen this guideline before?
     - If yes, where?
   - What does this guideline mean to you?
     - What does the word “beyond” mean to you?
   - Do you think it is important to continue to breastfeed to two years and beyond?
     - Yes – why?
     - No – why?
   - Do you think you will be able to follow this guideline?
     - Yes – why?
     - No – why?
   - Do you think the general public will be able to understand this guideline?
     - Yes – why?
     - No – why?
   - How would you re-word this guideline to make it more understandable to the general public?

2) **Gradually increase the amount of food, number of feedings and variety as your child gets older**
   - Have you heard about or seen this guideline before?
     - If yes, where?
   - What does this guideline mean to you?
     - What do the words “gradually increase” mean to you?
     - What does the word “variety” mean to you?
     - What does the phrase “number of feedings” mean to you?
   - Do you think it is important to gradually increase the amount of food, number of feedings and variety as your child gets older?
     - Yes – why?
     - No – why?
   - Do you and your family eat a variety of foods?
     - No – why?
   - Do you think you will be able to follow this guideline?
     - Yes – why?
     - No – why?
   - Do you think the general public will be able to understand this guideline?
     - Yes – why?
     - No – why?
   - How would you re-word this guideline to make it more understandable to the general public?

3) Give your child meat, chicken, fish or egg every day, or as often as possible

- Have you heard about or seen this guideline before?
  - If yes, where?
- What does this guideline mean to you?
  - What does the phrase “every day, or as often as possible” mean to you?
- Do you think it is important to give your child meat, chicken, fish or egg every day?
  - Yes – why?
  - No – why?
- Do you and your family eat meat, chicken, fish or egg every day, or as often as possible?
  - Yes – How many times a week?
  - No – why?
- Do you think you will be able to follow this guideline?
  - Yes – why?
  - No – why?
- Do you think the general public will be able to understand this guideline?
  - Yes – why?
  - No – why?
- How would you re-word this guideline to make it more understandable to the general public?

Break for refreshments – 15 minutes

4) **Give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day**
   - Have you heard about or seen this guideline before?
     - If yes, where?
   - What does this guideline mean to you?
     - What does the phrase “dark-green leafy vegetables” mean to you?
     - What does the phrase “orange-coloured vegetables” mean to you?
   - Do you think it is important to give your child dark-green leafy vegetables and orange-coloured vegetables and fruit every day?
     - Yes – why?
     - No – why?
   - Do you and your family eat dark-green leafy vegetables and orange-coloured vegetables and fruit every day?
     - No – why?
   - Do you think you will be able to follow this guideline?
     - Yes – why?
     - No – why?
   - Do you think the general public will be able to understand this guideline?
     - Yes – why?
     - No – why?
   - How would you re-word this guideline to make it more understandable to the general public?

5) **Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child**
   - Have you heard about or seen this guideline before?
     - If yes, where?
   - What does this guideline mean to you?
     - What does the phrase “sugary drinks” mean to you?
     - What does the phrase “high sugar snacks” mean to you?
     - What does the phrase “high fat salty snacks” mean to you?
   - Do you think it is important to avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child?
     - Yes – why?
     - No – why?
   - Do you and your family drink sugary drinks and eat high sugar, high fat salty snacks often?
     - Yes – How many times a week?
     - No – why?

- Do you think you will be able to follow this guideline?
    - Yes – why?
    - No – why?
- Do you think the general public will be able to understand this guideline?
    - Yes – why?
    - No – why?
- How would you re-word this guideline to make it more understandable to the general public?

6) Hands should be washed with soap and clean water before preparing or eating food

- Have you heard about or seen this guideline before?
    - If yes, where?
- What does this guideline mean to you?
    - What does the phrase “clean water” mean to you?
- Do you think it is important to wash hands with soap and clean water before preparing or eating food?
    - Yes – why?
    - No – why?
- Do you and your family wash your hands with soap and clean water before preparing or eating food?
    - No – why?
- Do you think you will be able to follow this guideline?
    - Yes – why?
    - No – why?
- Do you think the general public will be able to understand this guideline?
    - Yes – why?
    - No – why?
- How would you re-word this guideline to make it more understandable to the general public?

7) Encourage your child to be active

- Have you heard about or seen this guideline before?
    - If yes, where?
- What does this guideline mean to you?
    - What does the word “encourage” mean to you?
    - What does the word “active” mean to you?
- Do you think it is important for your child to be active?
    - Yes – why?
    - No – why?

- Do you and your family stay active?
    - Yes – How many times a week?
    - No – why?
- Do you think you will be able to follow this guideline?
    - Yes – why?
    - No – why?
- Do you think the general public will be able to understand this guideline?
    - Yes – why?
    - No – why?
- How would you re-word this guideline to make it more understandable to the general public?

8) Feed your child five small meals during the day

- Have you heard about or seen this guideline before?
    - If yes, where?
- What does this guideline mean to you?
    - What does the phrase “five small meals” mean to you?
- Do you think it is important to feed your child five small meals during the day?
    - Yes – why?
    - No – why?
- Do you think you will be able to follow this guideline?
    - Yes – why?
    - No – why?
- Do you think the general public will be able to understand this guideline?
    - Yes – why?
    - No – why?
- How would you re-word this guideline to make it more understandable to the general public?

9) Make starchy foods part of most meals

- Have you heard about or seen this guideline before?
    - If yes, where?
- What does this guideline mean to you?
    - What does the phrase “starchy foods” mean to you?
    - What does the phrase “part of most meals” mean to you?
- Do you think it is important to make starchy foods part of most meals?
    - Yes – why?
    - No – why?
- Do you and your family make starchy foods part of most meals?
    - Yes – How many times a week?
    - No – why?

- Do you think you will be able to follow this guideline?
    - Yes – why?
    - No – why?
- Do you think the general public will be able to understand this guideline?
    - Yes – why?
    - No – why?
- How would you re-word this guideline to make it more understandable to the general public?

10) Give your child milk, maas or yoghurt every day

- Have you heard about or seen this guideline before?
    - If yes, where?
- What does this guideline mean to you?
- Do you think it is important to give your child milk, maas or yoghurt every day?
    - Yes – why?
    - No – why?
- Do you and your family drink milk, maas or yoghurt every day?
    - No – why?
- Do you think you will be able to follow this guideline?
    - Yes – why?
    - No – why?
- Do you think the general public will be able to understand this guideline?
    - Yes – why?
    - No – why?
- How would you re-word this guideline to make it more understandable to the general public?

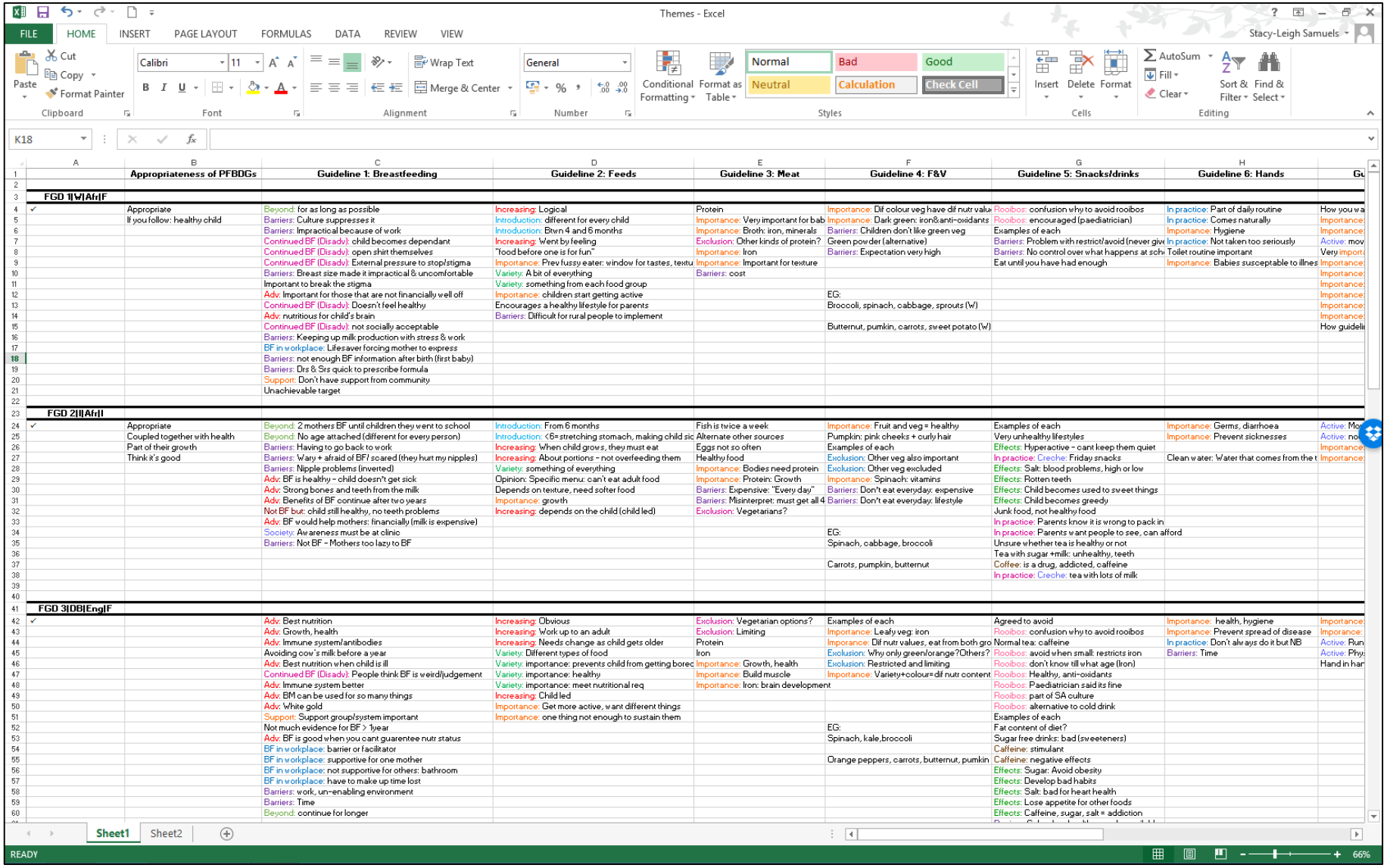
General questions

- Do you think these guidelines are appropriate for a child between the ages of 12 and 36 months?
    - Yes – why?
    - No – why?
- Are there possible barriers stopping families from following these guidelines?
- Are there any factors that may help families to follow these guidelines?
- What are your overall feelings towards these guidelines?

Closing remarks

Thank you all for participating in today's discussion. Your input is appreciated.

ADDENDUM G: MICROSOFT EXCEL SPREADSHEET FOR QUALITATIVE DATA ANALYSIS



Themes - Excel

	Appropriateness of PFBDGs	Guideline 1: Breastfeeding	Guideline 2: Feeds	Guideline 3: Meat	Guideline 4: F&V	Guideline 5: Snacks/drinks	Guideline 6: Hands	Gu
FGD 1[W]Afr[F								
✓	Appropriate	Beyond: for as long as possible	Increasing: Logical	Protein	Importance: Dif colour veg have dif nutr valu	Rooibos: confusion why to avoid rooibos	In practice: Part of daily routine	How you w
	If you follow: healthy child	Barriers: Culture suppresses it	Introduction: different for every child	Importance: Very important for bab	Importance: Dark green: iron&anti-oxidants	Rooibos: encouraged (paediatrician)	In practice: Comes naturally	Importance:
		Barriers: Impractical because of work	Introduction: Btwn 4 and 6 months	Importance: Broth: iron, minerals	Barriers: Children don't like green veg	Examples of each	Importance: Hygiene	Importance:
		Continued BF (Disadv): child becomes dependant	Increasing: Went by feeling	Exclusion: Other kinds of protein?	Green powder (alternative)	Barriers: Problem with restrict/avoid (never giv	In practice: Not taken too seriously	Active: mov
		Continued BF (Disadv): open shirt themselves	"food before one is for fun"	Importance: Iron	Barriers: Expectation very high	Barriers: No control over what happens at sch	Toilet routine important	Very import
		Continued BF (Disadv): External pressure to stop/stigma	Importance: Prev fussy eater: window for tastes, textu	Importance: Important for texture		Eat until you have had enough	Importance: Babies susceptable to illnes	Importance:
		Barriers: Breast size made it impractical & uncomfortable	Variety: A bit of everything	Barriers: cost				Importance:
		Important to break the stigma	Variety: something from each food group					Importance:
		Adv: Important for those that are not financially well off	Importance: children start getting active		EG:			Importance:
		Continued BF (Disadv): Doesn't feel healthy	Encourages a healthy lifestyle for parents		Broccoli, spinach, cabbage, sprouts (W)			Importance:
		Adv: nutritious for child's brain	Barriers: Difficult for rural people to implement					Importance:
		Continued BF (Disadv): not socially acceptable			Butternut, pumkin, carrots, sweet potato (W)			How guideli
		Barriers: Keeping up milk production with stress & work						
		BF in workplace: Lifesaver forcing mother to express						
		Barriers: not enough BF information after birth (first baby)						
		Barriers: Drs & Srs quick to prescribe formula						
		Support: Don't have support from community						
		Unachievable target						
FGD 2[I]Afr[I								
✓	Appropriate	Beyond: 2 mothers BF until children they went to school	Introduction: From 6 months	Fish is twice a week	Importance: Fruit and veg = healthy	Examples of each	Importance: Germs, diarrhoea	Active: Mo
	Coupled together with health	Beyond: No age attached (different for every person)	Introduction: <6=stretching stomach, making child sic	Alternate other sources	Pumpkin: pink cheeks + curly hair	Very unhealthy lifestyles	Importance: Prevent sicknesses	Active: no
	Part of their growth	Barriers: Having to go back to work	Increasing: When child grows, they must eat	Eggs not so often	Examples of each	Effects: Hyperactive - cant keep them quiet		Importance:
	Think it's good	Barriers: Wary + afraid of BF/ scared (they hurt my nipples)	Increasing: About portions - not overfeeding them	Healthy food	Exclusion: Other veg also important	In practice: Creche: Friday snacks	Clean water: Water that comes from the t	Importance:
		Barriers: Nipple problems (inverted)	Variety: something of everything	Importance: Bodies need protein	Exclusion: Other veg excluded	Effects: Salt: blood problems, high or low		
		Adv: BF is healthy - child doesn't get sick	Opinion: Specific menu: can't eat adult food	Importance: Protein: Growth	Importance: Spinach: vitamins	Effects: Rotten teeth		
		Adv: Strong bones and teeth from the milk	Depends on texture, need softer food	Barriers: Expensive: "Every day"	Barriers: Don't eat everyday: expensive	Effects: Child becomes used to sweet things		
		Adv: Benefits of BF continue after two years	Importance: growth	Barriers: Misinterpret: must get all 4	Barriers: Don't eat everyday: lifestyle	Effects: Child becomes greedy		
		Not BF but: child still healthy, no teeth problems	Increasing: depends on the child (child led)	Exclusion: Vegetarians?		Junk food, not healthy food		
		Adv: BF would help mothers: financially (milk is expensive)				In practice: Parents know it is wrong to pack in		
		Society: Awareness must be at clinic			EG:	In practice: Parents want people to see, can afford		
		Barriers: Not BF - Mothers too lazy to BF			Spinach, cabbage, broccoli	Unsure whether tea is healthy or not		
						Tea with sugar +milk: unhealthy, teeth		
					Carrots, pumpkin, butternut	Coffee: is a drug, addicted, caffeine		
						In practice: Creche: tea with lots of milk		
FGD 3[DB]Eng[F								
✓		Adv: Best nutrition	Increasing: Obvious	Exclusion: Vegetarian options?	Examples of each	Agreed to avoid	Importance: health, hygiene	Importance:
		Adv: Growth, health	Increasing: Work up to an adult	Exclusion: Limiting	Importance: Leafy veg: iron	Rooibos: confusion why to avoid rooibos	Importance: Prevent spread of disease	Importance:
		Adv: Immune system/antibodies	Increasing: Needs change as child gets older	Protein	Importance: Dif nutr values, eat from both gro	Normal tea: caffeine	In practice: Don't alw ays do it but NB	Active: Run
		Avoiding cow's milk before a year	Variety: Different types of food	Iron	Exclusion: Why only green/orange?Others?	Rooibos: avoid when small: restricts iron	Barriers: Time	Active: Phy
		Adv: Best nutrition when child is ill	Variety: importance: prevents child from getting borec	Importance: Growth, health	Exclusion: Restricted and limiting	Rooibos: don't know till what age (Iron)		Hand in har
		Continued BF (Disadv): People think BF is weird/judgement	Variety: importance: healthy	Importance: Build muscle	Importance: Variety+colour=dif nutr content	Rooibos: Healthy, anti-oxidants		
		Adv: Immune system better	Variety: importance: meet nutritional req	Importance: Iron: brain development		Rooibos: Paediatrician said its fine		
		Adv: BM can be used for so many things	Increasing: Child led			Rooibos: part of SA culture		
		Adv: White gold	Importance: Get more active, want different things			Rooibos: alternative to cold drink		
		Support: Support group/system important	Importance: one thing not enough to sustain them			Examples of each		
		Not much evidence for BF > 1year			EG:	Fat content of diet?		
		Adv: BF is good when you cant guarentee nutr status			Spinach, kale,broccoli	Sugar free drinks: bad (sweeteners)		
		BF in workplace: barrier or facilitator				Caffeine: stimulant		
		BF in workplace: supportive for one mother			Orange peppers, carrots, butternut, pumkin	Caffeine: negative effects		
		BF in workplace: not supportive for others: bathroom				Effects: Sugar: Avoid obesity		
		BF in workplace: have to make up time lost				Effects: Develop bad habits		
		Barriers: work, un-enabling environment				Effects: Salt: bad for heart health		
		Barriers: Time				Effects: Lose appetite for other foods		
		Beyond: continue for longer				Effects: Caffeine, sugar, salt = addiction		

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

Field testing of the revised Paediatric Food-Based Dietary Guidelines amongst mothers/caregivers of children aged 12-36 months in the Stellenbosch Municipality in the Western Cape Province, South Africa

REFERENCE NUMBER: N14/09/122

PRINCIPAL INVESTIGATOR: Stacy-Leigh Samuels

ADDRESS: Tygerberg Medical Campus, Francie van Zijl Drive, Stellenbosch University, Parow, Cape Town, 7505

CONTACT NUMBER: 021-938 9259

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff or doctor any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you could be involved. Also, taking part in this study is **entirely voluntary,** which means that you do not have to take part if you do not want to. If you say no, this will not affect you negatively in any way whatsoever. You are also free to pull out from the study at any point, even if you do agree to take part.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University** and will be carried out according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

The research study will look at the appropriateness and understanding of the new Paediatric Food-Based Dietary Guidelines amongst mothers/caregivers of children aged 12-36 months. A number of focus groups, consisting of 6-8 people, will be held in the Stellenbosch Municipality in the Western Cape Province where these guidelines will be discussed.

Why have you been invited to participate?

You have been invited to participate because you are a mother/caregiver of a child between the ages of 12-36 months and you do not have any formal training in nutrition.

What will your responsibilities be?

You will be expected to attend a 2 hour focus group discussion where the Paediatric Food-Based Dietary Guidelines will be discussed. You will also be asked socio-demographic questions during this session.

Will you benefit from taking part in this research?

You will not benefit directly from taking part in this study. However, your contribution may assist in the final development of an educational tool for improving child health in South Africa.

Are there any risks involved in your taking part in this research?

There are no risks involved.

If you do not agree to take part, what alternatives do you have?

You will not be disadvantaged if you choose not to take part in this study.

Who will have access to your medical records?

Your medical records are not applicable to this study therefore no one will have access to them.

What will happen in the unlikely event of some form of injury occurring as a direct result of your taking part in this research study?

No injury could occur as a direct result of you taking part in this study.

Will you be paid to take part in this study and are there any costs involved?

No, you will not be paid to take part in the study. There will be no costs involved for you, if you do take part. Refreshments, such as tea, coffee and muffins, will be served at all discussions, during comfort breaks. You will receive a parcel consisting of healthy snacks (e.g. fresh/dried fruits and yoghurt) as a token of appreciation for taking part in the study.

Is there anything else that you should know or do?

All collected information will be strictly confidential. An audio recording will be made but privacy is ensured. If the data is used in a publication or thesis, your identity will remain anonymous.

You can contact the Health Research Ethics Committee at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed. You will receive a copy of this information and consent form for your own records.

INFORMED CONSENT TO TAKE PART IN THE RESEARCH STUDY

Declaration by participant

By signing below, I ……. agree to take part in a research study entitled *(Field testing of the revised Paediatric Food-Based Dietary Guidelines amongst mothers/caregivers of children aged 12-36 months in the Stellenbosch Municipality in the Western Cape Province, South Africa)*.

I declare that:

- I have read or had read to me this information and consent form and it is written in a language which I understand and feel comfortable with.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and nothing bad will happen to me. I will not be discriminated against in any way.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interest, or if I do not follow the study plan, as agreed to.

Signed at (*place*) .....…..…… on (*date*) ……..…….. 2015.

....

Signature of participant **Signature of witness**

Declaration by investigator

I *(name)* ……..…… declare that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter. (*If an interpreter is used then the interpreter must sign the declaration below.*

Signed at (*place*) .....…..…… on (*date*) ……...…….. 2015.

....

Signature of investigator **Signature of witness**

Declaration by interpreter

I *(name)* ……..…… declare that:

- I assisted the investigator (*name*) ……. to explain the information in this document to (*name of participant*) ……..…….. using the language medium of Afrikaans/Xhosa.
- We encouraged him/her to ask questions and took adequate time to answer them.
- I conveyed a factually correct version of what was related to me.
- I am satisfied that the participant fully understands the content of this informed consent document and has had all his/her question satisfactorily answered.

Signed at (*place*) .....…..…… on (*date*) ……...…….. 2015.

....

Signature of interpreter **Signature of witness**

INFORMED CONSENT FOR AUDIO RECORDING

The purpose of the meeting and the handling, use and final destruction of the recordings, have been explained to me. The researcher has offered to answer any of my questions relating to the procedure of the recording. I understand the explanation and I have been given a copy of this form for my records.

Signed at (*place*) .....…..…… on (*date*) ……...…….. 2015.

.....	.....
Name of participant	Signature of participant
.....	.....
Name of witness	Signature of witness
.....	.....
Name of investigator	Signature of investigator